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THE OPTIMIST.

To you, my cheerful friend! To you, who seem to be an exquisite architect forever building up the castle of happiness out of all the losses and crosses and wrecks and ruins that fate may throw about you! To you, who can always see the silver lining to every cloud; who can poniard your sorrow and share your joys, and laugh and sing and be content, and still keep up the fight till life's rugged journey ends!—Joseph D. Houston.

Information Should be Accurate.

The value of accurate information is not appreciated by a great many persons. This applies to the telephone field as well as to other pursuits. Often manufacturers receive orders for material reading "same as last ordered." No information is given as to the time the last order may have been placed, and this in many cases causes the supplier considerable difficulty to locate. Then the order may be so worded that several interpretations may be made of it, requiring considerable correspondence and taking time to satisfactorily explain.

The information should be explicit. It is better to give more than enough information than not to give enough. A case recently came to our attention in which a certain article was desired but no size specified. A letter was written stating that the article could be furnished in a certain size or smaller as it would have to be made and hence any smaller size desired could be supplied. The customer then wrote in asking for "the smaller size" article, thus necessitating another letter asking for dimensions. The third letter from the customer was equally unsatisfactory, as the supplier had to guess at the size desired.

The supply men often ship material which is not as specified by the customer for the reason that they know the material as ordered is not what the customer really wants and that a replacing shipment would be necessitated if the order were taken literally. Frequently, however, the supply man is not a mind reader and endeavors to ship the material as specified. After the shipment is received, the customer writes in a letter explaining that the material is not what he wanted. More correspondence follows and the dealer usually makes a replacing shipment, charging the expense to profit and loss, rather than have a disgruntled customer.

The Boss Cannot Be Fooled.

There are people in every line of work who are continually on the lookout for opportunities to slight their work. They have their eye constantly upon the boss, and only when he is looking at them, are they industrious. As soon as he is out of sight, they cease their efforts. These persons do not fool him as he generally finds out their shortcoming within a short time and learns who are the workers in his department. When the question of promotion of an employe comes up, the laggard is not the one who is recommended for promotion.

The story is told of a certain employe who had been doing a good share of the work of another man in addition to his own. He did not believe the man in charge of the department was aware of his efforts. One day he complained to his boss' superior about the extra amount of work which he was doing. He was directed to "do as you are told and be quick about it. If your boss does not know that you are doing another man's work, he will not hold his position long."

The person who pays no attention to the clock and to whether his boss is watching him, will be the one who is considered for promotion when a vacancy is to be filled. If the boss does not know what his men are doing, he will not be the boss very long.

Johnny and Other Loose Screws

By HERBERT KAUFMAN

Watch the little screws, and the big wheels will take care of themselves. It isn't the broken shaft that cripples the most machinery and shuts down the works; it's the little nut on the little bolt that works loose and throws all the rest of the mechanism into a jumble; it's the little men in the little posts—the minor employes, the office boys and the petty clerks—who tangle up the great systems.

For instance, there's Johnny. Last week you dictated a four-page letter covering every detail of your deal with X; for days you were in consultation with your attorneys and your managers; you canceled your bridge game at the Club Friday night to carefully review all the documents in the matter; you verified every statement and you remained downtown an hour longer than usual in order to be sure that the stenographer corrected the mistakes in your dictation; then you handed the letter to Johnny to post. And Johnny lost it or took it home with him, intending to drop it in the box at his own corner, but forgot, and kept on forgetting until an angry letter, protesting against your slipshod methods, gave you the first intimation that there was a muss-up. Another screw loose.

Or, there's Andrews, the billing clerk, who tries to upset the laws of nature and demonstrate that one brain can properly consider two subjects at the same time. If Andrews were that gifted he wouldn't be drawing fifteen per in your accounting department; the world of vast affairs would be coveting him. Andrews thinks that he can discuss the baseball prospects while he makes out his statements. And so Blank Brothers (whose account you have managed to land after three years of effort) wrote in on Tuesday criticizing the methods of a concern which didn't know when its discounts had been taken, and informed you that, in the future, they would place their orders with a firm possessing more gumption than to send a dun to a customer whose account was up to date. Andrews is a fearfully expensive luxury at his salary.

If there is a pink slip in either of their envelopes next Saturday, chances are there'll be two more to swell and snarl that "a fellow hasn't a chance nowadays."

Poor Johnny and poor Andrews! You'll never understand; you'll never know that you've had your chance and that you didn't deserve it; you'll go stumbling and fumbling through life, neglecting opportunities as they rise, never realizing that success is measured by a man's daily record, that a ladder of well done little things leads to the big posts up top.

The start is all that counts; the thread of destiny is wound upon such a fat spool that no one man ever had the time within the span of one life to get to its end. But you break the thread at the outset. You lack steadiness; you don't learn your correction with the rest of the works. You can't grasp the scheme of growth—that success begins as a bud, and that the ripened fruit of fortune will never be yours if you kill the blossoms of chance by the early frost of neglect.

You are being weighed and measured every hour; you are under a constant test—a test by which you can prove yourself. Carelessness is the only thing which can be always regulated by your own actions, and carelessness is the one thing that will not be forgiven. Anything else can be explained; errors of judgment are but human (even Napoleon made them), but laziness, indifference, disobedience of orders —these deserve no mercy and receive none.

A ten-year-old boy saved all Holland from re-becoming a part of the sea; he found one little hole in the dyke which protected the Netherlands from the ocean; he stuck his finger in the hole and saved the centuries of work which had rendered his country safe.

There are holes in every business dyke, little leaks through which failure can work its way and sweep down all that effort and honesty of purpose have achieved. It is you who make the holes; you, Johnnny, and you, Andrews.

Paste this on the walls of your memory.

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Increasing the Efficiency of Telephone Traffic Methods

Lecture Delivered at the Annual Convention of the National Independent Telephone Association by Members of the Telephone Service Association—Toll Operating Methods and Records Which Have Produced Beneficial Results for Telephone Companies

By W. S. Vivian and H. D. Stroud

MR. VIVIAN.

One of Emerson's rules of efficiency that I have heard about somewhat recently is that we should have records which are accurate and available. It is my experience so far in matters pertaining to telephone traffic that such is not the case. If it were the case, in our work that we would bring before you today, we would be able to give you some very definite conclusions, rather than perhaps some generalities and prospective conclusions.

We have been working for some two years along a certain line of traffic with a view of increasing the efficiency of the operator, and with the operator, an increased efficiency of circuit also.

A school of instruction was held at Bloomington in December. One of the gratifying things about this particular school is that several of the men whom I have met here at the convention and who were present during those two days, have said that their operators are still talking about that school. We hope to produce great results in the way of better team work and co-operation on the part of the operators. When we first started out in our Service association work, we found that the operators were not acquainted with one another; that they knew the distant operator up the line more as a piece of machinery or a thing, than as an individual or a human being. As a result the operators were constantly jangling with each other to a certain extent; not because they wanted to be mean with one another or for any such reason as that, but simply because they knew nothing about the conditions which the other operator had to face, had to meet.

They were thoroughly acquainted with their own individual office and knew they were trying to give the very best possible service. They felt, if the operator in the other office did not answer just as soon as a signal was given, that it was because the operator up yonder had nothing to do and did not want to answer. That seemed to be the general impression, a lack of faith and confidence in general.

That feature is almost entirely removed by means of such a gathering as that at Bloomington, where the operators can come together for a day or two; where they can talk over the details of handling the work; and where they can get together in a social way and become thoroughly acquainted with one another. We find this condition of lack of co-operation very largely disappears and they soon realize that they are all busy; that they are all handling about all that they can, and if the operator in yonder office fails to respond as quickly as they think she should, it is because perhaps she can not do it any quicker, that she is tied up with her work.

In a school of instruction we start in with the qualifications for an operator. The thing we have emphasized to date is this: That an operator should have a bright, sunny, cheerful disposition, regardless of whatever other qualifications she may have. That is the most important thing, that an operator should have a disposition which will be friendly and cheery, regardless of what comes up.

If you have an operator who has a quick, abrupt manner, the operators around her, who do not know her, are antagonized.

I want to skip all the matter of operating rules, and bring you right along now to the conditions as we find them in our circuits and various things.

This circuit of Fig. 1 shows a circuit lay-out. It covers a distance of a hundred miles. It shows an actual condition and I want to call your attention to some of the figures. The dots on the lines represent stations. We have attempted to show a month of business and the average per day per load.

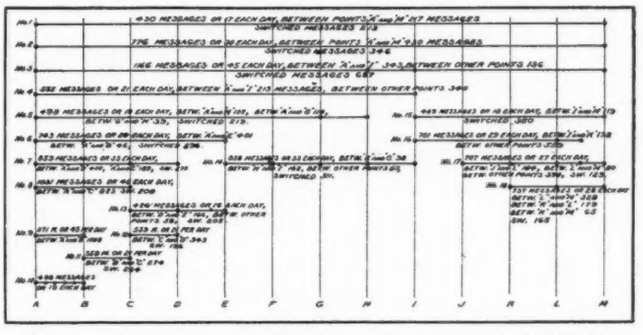


Fig. 1. Circuit Layout Showing Actual Traffic Conditions.

The circuit at the top, which I have labelled No. 1, shows 430 messages handled in that month, or 17 each day. Between *A* and *M* on circuit No. 1, 217 messages were handled out of the 430, or 213 of them were switched. Now the question arises, is a 50 per cent. switching proposition on a circuit a good one or not? Can it be permitted or is it a condition that actually exists which can not be avoided?

Circuit No. 2 goes to identically the same stations and handled this month 776 messages or 30 per day. We will all agree, I think, that that is a good, fair load, 30 messages a day. On that particular circuit 430 of them were between *A* and *M* and 346, or almost half, again were switched.

What I mean by switched is a message coming from a point below *A* and perhaps going to *M*, or a message orginating at *A* going to a point beyond *M* or the reverse. Is that a good proposition?

Circuit No. 3 handled 1,166 messages or 45 each day during the month. Between *A* and *I*, we find that 343 of them were handled between these two points; that 136 were handled between other combinations on the same circuit. You notice there are four columns in that circuit and that 687 of the messages were switched.

We could go through that. I will not take time to do that, but each one of those circuits shows a certain condition. We find of the entire number of messages handled on that whole combination, that considerable over one-third of them were switched through.

I want to bring out just one thought right here as a sort of sidelight on that and it is this: I know in our state, and I find the same condition true in other states, that the companies will often go ahead and make certain records. After the records are made, they are filed away and that is the last that ever happens to that record. Consequently, the companies go to the expense necessary to get some certain results, without getting any.

To find out whether the circuit shown is a good proposition—a good circuit lay-out—we mean that you must go into the records and analyze them in detail; find out, for instance, where these switched messages went to. Where did those 687 messages go to? Is it not possible that there is enough traffic to some point where a circuit should extend to and thus take

off all the switching work on the part of these operators, or should there be certain circuits coming through this point to other points below?

To answer that question means that you would have to analyze the conditions in minute detail just to see what happens. That can only be found out by a very close study.

For some months we have had a number of offices counting the records; if it is a small office, one day each week; if it is

Exchange	Population	No. of Sent Messages	Average elapsed minutes from: Recording Ticket until delivered to terminating operator	Delivering to terminating operator until parties talk	Recording ticket until parties talk	Average elapsed minutes from receiving ticket until parties talk	No. messages received
A	24,062	177	1.5	1.5	3	1	72
B	2,757	567	2	1.7	3.7	1.7	472
C	9,639	1155	2.1	1.9	4	1.8	1296
D	2,527	173	1.9	2.8	4.7	2.7	165
E	4,484	702	3.8	2.5	6.3	1.8	740
F	31,229	400	3.4	3	6.4	2	396
G	50,510	697	9.7	2.5	12.3	1.3	1071
Average		3871	3.8	2.3	6.1	1.7	4212

Fig. 2. Speed Record of Toll Offices.

a large office, that is a medium sized office, two days a month; and the really large offices, one day a month. We have them give us a record showing the number of messages which they handle during that particular time; have them analyze the tickets to show the number of minutes elapsed from the time the ticket is reported until it is delivered to the distant operator.

You will notice that this first office, Fig. 2, Office A, got her tickets through in a minute and a half. That was the average for that period of time. It includes all delays, out of order, *NC* (no circuit) conditions, everything of that sort. Her average was a minute and a half.

In some of the schools we held, we asked certain managers and operators to guess how long they thought it took them, on the average, to get a ticket through to the distant operator. They had just as good an idea as I did about it, but none of us really thought that it was as rapid as that record shows. An analysis shows that certain offices are getting tickets through to the distant operator in a minute and a half.

The next town given in the table, population 2,700, shows a two minute record; a town of 10,000, 2.1 minutes; a town of 30,000 3.4 minutes, and so on. There is not an office, that I know of on the list which has not a good circuit lay-out. They all have good, fair circuit lay-outs.

We have, in addition to the number of minutes between recording the ticket until it is delivered to the distant operator, the number of minutes it takes the distant operator to get the party on the line ready to talk.

I recall one case where the operator received a message from a town more than 150 circuit miles away, and made a record of the ticket as she received it, but she was busy just at that moment with some other work. The result was that she laid the ticket to one side, temporarily. I was in the room, watching the whole transaction. She got through with her other work first and then started steps to put up the ticket. Nearly five minutes elapsed, in that particular instance, before the receiving operator made the first move towards getting the party called on to the circuit. We can simply emphasize this as an important proposition; that the operator get the party up quick and thus reduce the circuit time.

The fifth column of figures shows the entire time from the recording of the ticket until the parties talk. We have eliminated on the record of just these certain tickets, all conditions where the parties were not at the telephone. They were eliminated because they are outside of our jurisdiction entirely. But we have included everything for which the telephone company is responsible.

You will see it is a fair average, 3 minutes, 3.7, 4, 4.7, minutes. When we realize that the great mass of our business goes through in one or two minutes, we can certainly congratulate ourselves on the kind of service we are giving. The tickets held to 15 minutes are very much the exception.

On this chart is shown simply the time it takes the particular office making the report to get the parties on to the line and the tickets.

It is rather a peculiar thing in that you will notice that the time of one office shows a better average than that of another. That shows that these offices which are making these reports and which are following up this work, are gradually leaving the other offices behind. They are getting ahead. We are handling this through the chief operator in the offices, large and small. The operators become intensely interested in this thing. When it is reproduced graphically as a curve such as we are using, they watch it and they want the curve to go up, showing a better record.

Overtime is a question which has been discussed a great deal for a number of years. I recall four or five years ago in one of our conventions, the general manager of one of the good sized companies stated very emphatically before the convention that he simply could not and would not check overtime in his operation; that it was a losing proposition; that it made enemies for the company and was a bad thing all round, and he refused absolutely to do it. However, as time went along the overtime began to be emphasized and certain things were done.

In February, 1911, we secured from a number of offices, a record showing the number of minutes overtime they checked and its percentage as compared with the entire business.

I wish to call your attention to perhaps just one or two of these conditions. Referring to Fig. 3, Office 4, in a town of 1,500 population, in February, 1911, checked 60 cents overtime, which was 0.8 of 1 per cent. of the entire toll business. In the different months during the year we followed it up

Office	Population	Feb. 1911 Amount	Feb. 1911 Per cent.	Feb. 1912 Amount	Feb. 1912 Per cent.	Increase Amount	Increase Per cent.	
1	800	4.97	4.4	11.87	7.7	6.90	3.3	C.
2	1,000	1.80	1.4	9.00	6.8	7.20	5.4	C.
3	1,064	4.70	5	9.16	11.9	4.46	6.9	
4	1,300	2.10	1.9	14.99	10.7	12.89	8.8	C.
5	1,500	.60	.8	18.08	15.1	17.48	14.3	C.
6	2,000	8.20	9.7	20.84	14.5	12.64	4.8	
7	2,000	8.65	11.5	13.20	13.3	4.55	1.8	
8	2,331	6.06	7.4	9.69	11.8	3.63	4.4	
9	2,400	1.77	1.1	7.45	3.6	5.68	2.5	C.
10	2,700	16.80	6.4	77.25	21.1	60.45	14.7	T.S.
11	3,500	5.25	3.8	14.00	9.1	8.75	5.3	
12	4,000	7.60	2.4	34.50	9.4	26.90	7	
13	4,000	8.30	5.6	28.59	13.8	20.29	8.2	C.
14	9,000	35.95	8.3	58.35	10.9	22.40	2.6	
15	12,500	23.93	7.7	38.85	9.4	14.92	1.7	
16	25,000	18.15	7	36.80	14.9	18.65	7.9	
17	115,000	207.25	7.7	447.85	13.6	240.60	5.9	T.S.
18	500,000	384.57	15.8	616.88	25.5	232.31	9.7	C.
		746.65	9.5	1467.35	16.0	720.70	6.5	

Fig. 3. Table Showing Savings by Charging for Overtime.

with further reports, until February, 1912, that same office checked $18.08 in overtime or 15.1 per cent., an increase of $17.48 or 14.3 per cent. It represents simply this: that there was an office where the question of overtime had never been emphasized, where little or no attention was paid to it. The minute the general manager of that company became thoroughly interested in this question, he furnished the oper-

ators with a calculagraph. That was after our February, 1911, comparison, and as soon as he got his calculagraph in and working, we got the jump of $17. My understanding is the calculagraph costs something like $75.

I want to ask you, just by way of suggestion, is not $17.48 a pretty fair return for a $75 investment per year? That is, for a month, and the yearly income would be twelve times that.

We have another town of 2,700, No. 10 in the table (Fig. 3). It checked in February, 1911, $16.80 or 6.4 per cent. In February, 1912, notice $77.25 or 21.1 per cent. overtime. A time stamp had been installed in the meantime and an increase of $64.45 or 14.7 per cent. was the result. This practically paid for the time stamp outfit in one month.

The entire increase shows a jump from $746.60 or 9.5 to $1,467.35 or 16 per cent. in the course of one year in the offices listed in the table.

There are certain local conditions, perhaps, which enter into all questions of overtime, that is, as it is presented. Different towns may check different percentages of overtime; but it happens here that if we have records that are coming into us regularly where we can check one against the other and where we can send the results of our comparisons back into these offices, that no manager likes to see his office down at the bottom of the list. He likes to see himself at as near the top as he can possibly be, and the result will be that there will be a revival introduced which will cause results.

Some of these very overtime comparisons which we have sent out, have been interesting to me from the fact that they fell where I wanted them to. Managers have called me up, perhaps the next day, over the long distance, or perhaps they would take the time to write a letter, to say that they did not like the looks of their own individual office in the report and then they would say, "Look out for us next month; we are going to get up there."

Overtime is one of the things that we can get. I wrote to a number of managers just before I came over to the convention to see what their opinion was in regard to this matter. Some of those replies, if we had time to read them, would be very interesting; but in no case did any manager take exception to the matter of overtime. They all understood that it took checking and that the same principle should be introduced which is used in the store.

One man said, "When you go into a store to buy a yard of ribbon, the clerk, just out of generosity, will not give you 48 inches, but will sell you a yard. We are selling service at so much per minute and we should watch those minutes very closely and get pay for every minute that is used."

We have a city, a little way from Chicago, which is using a five-minute schedule and the overtime last month amounted to something like 3 per cent. on the five-minute schedule. Two months ago, they were not checking any overtime at all in that particular office. The manager of that company told me, since coming to this convention, he regarded that 3 per cent. as just so much velvet; it was something they had not had before, and amounted to something like $25 or $30 a month.

Mr. Stroud.

The table given in Fig. 4 takes up a little different angle of the traffic problem and the considerations are likewise as important as those discussed by Mr. Vivian.

Have you, as an operator, as a manager, a record which will show from month to month, the lost calls in such a form that you can analyze them and effect a remedy where the remedy is needed. In the old days of steam engines, they used to take a card once in a while. That was their indicator. Some took it and some did not. As long as the engine ran, it was all right. That is true of a number of telephone plants today. As long as calls get through and the subscribers do not make too hard a kick to the manager, there is nothing done. On the other hand, the manager is not working, he is not studying his traffic and the operation of his plant to see that it is being handled with any degree of efficiency. He is getting by but is not necessarily performing efficient service.

(To be continued.)

Tri-State Club's First Annual Entertainment.

The Tri-State Telephone Technical & Social Club, of Minneapolis and St. Paul, recently gave its first annual entertainment in the Merriam Park Masonic Temple. J. A. Beckstrom, the club's secretary, writes TELEPHONY that the occasion was a great success in every respect.

The entire program was rendered by employes of the company, the main features being the playlet and the orchestra. The playlet was written especially for the occasion by L. W. Schottmuller, the chief inspector at the St. Paul main exchange.

W. S. Williams, St. Paul manager, and C. G. Carter, St. Paul city foreman, were alluded to as the long and short of the telephone business. The orchestra, consisting of 16 pieces, rendered some excellent music, considering the fact that it has only been organized about two months, John W. Kessler of the St. Paul main exchange is the leader.

The other instrumental and vocal numbers were especially well rendered and received hearty applause as did all the numbers. The promoters of the entertainment, when calling for volunteers to participate in the program, were most agreeably surprised at the amount of real talent among the employes of the Tri-State Telephone & Telegraph Co. The program follows:

PROGRAM.

March—"Attention," (W. W. Vollmar), Tri-State Technical Club Orchestra.

Mezzo-Soprano solo—"Fleeting Days" (Bailey), Miss Pearl Emerson, Miss Olive Emerson, accompanist.

Recitation—"The Selfish Giant," Miss Dora Chreiman.

Violin solo—"Forgotten" (E. Cowles), Mr. J. W. Kessler.

Vocal solo—"Take Me Back to Dreamland," Miss Cora Madison.

Barytone solo and Male Quartet—(*a*) "Where The River Shannon Flows" (Russel), Mr. R. B. Bogart. (*b*) "Dixie Moon" (Grimble), Trouble Shooter's Quartet.

Piano duet—"Meet Me in the Vale of Dreams," The Misses Mary and Betty Dalkin.

Contralto solo—"The Garden of my Heart" (E. R. Ball), Miss Helen Gehan, Miss Elizabeth McCormick, accompanist.

Cornet solo—Selected, Mr. C. W. Clasen.

Recitation—"Somebody's Mother," Miss Margaret Bartholomew.

Intermezzo—"The Flower Girl" (P. Wenrich), Tri-State Technical Club Orchestra.

A comedy farce—The Telephone Installer (L. W. Schottmuller, playwright). Characters—Mr. Brown, business and clubman, A. Ingram; Sambo Johnsing, porter, James Cook; Mr. Snodgrass, installer, S. W. Tel. Co., Chas. Snyder. Scene, Mr. Brown's office; place, St. Paul; time, present.

Contralto solo—"Constancy" (Lipton), Miss Sadie Chreiman; Mrs. Chreiman, accompanist.

Piano duet—Selected, Miss Irene Barsness, Mr. W. C. Pellatt.

Indian club swinging and juggling, Mr. B. Hecht.

Violin solo—"Spring Maid Waltz," Miss Luella Reypetto.

Recitation—"When Uncle Jud ran for Mayor and they put a Woman Candidate Against Him," Mrs. Alvina Engalls.

Barytone solo—"Till the Sands of the Desert Grow Cold" (E. R. Ball) Mr. P. Bies, Mr. J. W. Kessler, violin obligato; Mr. W. C. Pellatt, accompanist.

Piano duet—"Dance of the Demons," The Misses Gertrude and Myrtle Jenson.

Soprano solo—"Should He Upbraid," (Bishop), Miss June Clarke,. Mr. Geo. L. Morgan, accompanist.

Recitation—Selected, Mr. F. G. Rettig.

Male quartet—Selected.

March—"Spirit of Independence" (Holzmann), Tri-State Technical Club Orchestra.

At the next regular club meeting, March 13, Walter Roll, plant chief at Minneapolis, will give an illustrated lecture on "Inside Wiring and Installing." The club will give a dance after Easter.

Convention of Iowa Independent Telephone Association

Co-operation the Keynote of President Kinney's Address—Discussion of Public Utilities Bill Which Is Now Before State Legislature—Addresses of Practical Interest to Operating Men and Discussions Were Participated in by Many

A good attendance and careful interest in all matters discussed are vitally essential to the success of any convention. The absence of either feature will not give a convention the impetus—"the spirit" to do things—but as the seventeenth annual convention of the Iowa Independent Telephone Association held at the Auditorium, Des Moines, March 11, 12 and 13, had a good attendance besides an apparent manifestation of enthusiasm, it may easily be termed as one of the best ever held.

The first day of the convention was given up wholly to an arrangement of preliminary details and to inspection of the various manufacturers' exhibits.

The address of welcome was postponed until Wednesday, March 12, and this marked the formal opening of the convention. C. C. Deering called the convention to order and ably took the place of the mayor who was unable to attend. Mr. Deering requested that careful attention be given by all at each session.

H. A. Kinney, president of the association in a manner peculiarly characteristic but in a style yet forceful and effective, greeted those present in behalf of the association. He assumed a prognostic view—glanced into the future by 50 years and vividly portrayed what might be the outcome if co-operation ceased to exist.

He went on to say that the convenience of the public would be the controlling factor in the determination of the kind of service to be rendered; that progression, to be materialized, requires the constant keeping of a plant in good condition, the first requisite for giving good service which inevitably secures a satisfied public. He emphasized the need for the maintenance of the association as it unifies the interest of all companies; tends to obtain co-operation in the problem affecting each company; and makes for the stability of the industry.

The public utilities commission bill, now before the Iowa state legislature, was briefly mentioned by Mr. Kinney. He expressed clearly the need that this bill be one absolutely fair to the utilities and their patrons. He spoke of the value of the Telephone Service Association and what it meant to both the large and small telephone companies.

His closing remarks were especially pertinent: "The better equipped companies, those of the larger class, must stimulate and encourage the smaller companies, as the service of one largely depends upon the service of the other. It is a case where each man liveth not unto himself alone. The world continually moves. The people are demanding better things and they have the right. It is up to us, if we care to be even a little cog in the complicated machinery of progress, to do our best, not only from the selfish standpoint of personal gain but also from the broader motives of helping human progress and achievement."

Manford Savage, president of the National Independent Telephone Association, who was on the program for an address, telegraphed his regrets at not being able to be present, being prevented by illness.

Senator L. E. Crist of the Iowa state legislature spoke of the provisions of the public utility bill, a bill which if passed will have power of regulation over all the public utilities of the state in the matter of rates, etc. Two points which Mr. Crist mentioned as being essential were adequate service and fair rates: adequate service securing for the public all conveniences, and fair rates being based on "the quality or character of service" and which also would allow a reasonable return for the investors. The power of the governor in the proposed bill to select the members to comprise the commission was lucidly pointed out as being necessary to secure for the public the highest efficiency. Competent men, divorced from political activities, will obtain this desired result. They must necessarily be familiar with the problems of the utilities under supervision.

F. L. Eldridge followed Senator Crist and briefly defined the purpose or functions of the Telephone Service Association and the advantages to be obtained therefrom. Mr. Eldridge gave some idea as to the results already accomplished and especially emphasized the value of the "consulting feature" of the association. All difficult problems and suggestions will be handled gratuitously to members by the best engineers.

With the resumption of business in the afternoon, Senator John. T. Clarkson of Albia, Iowa, interestingly as well as comprehensively explained the advantages of the proposed employers liability law for the state of Iowa.

Mr. C. Wing of Cleveland, Ohio, delivered a very interesting illustrated lecture on the "Manufacture of Dry Batteries."

Thursday morning was given up to a report of the business committee and the "Question Box," in charge of George E. Atkinson of Creston.

The following officers were elected: H. L. Byer, president, and C. C. Deering, secretary. The executive committee is composed of J. C. Thorn, H. B. Shoemaker, J. M. Plaister, and H. A. Kinney.

The following firms had attractive exhibits and displayed a full line of their apparatus:

Kellogg Switchboard & Supply Co., Chicago; Monarch Telephone Mfg. Co., Fort Dodge, Iowa; Illinois Electric Co., Chicago; Stromberg-Carlson Telephone Mfg. Co., Rochester, N. Y.; American Telephone Fire Alarm Co., Chicago; American Electric Co., Chicago; Cracraft, Leich Electric Co., Genoa, Ill.; Everstick Anchor Co., St. Louis, Mo.; Dean Electric Co., Elyria, O.; W. N. Matthews & Bros., St. Louis, Mo.; Electric Appliance Co., Chicago; Downing Electric Co., Des Moines, Ia.; and Electric Specialty Mfg. Co., Cedar Rapids, Iowa.

These companies did not exhibit but were represented: L. K. Deal Lumber Co., L. K. Deal; Wesco Supply Co., L. A. Heitmer; Telephone Improvement Co., E. C. Lewis; Electrical Contract Co., G. L. Saunders and J. E. Lyons; J. H. Roeblings Sons Co., W. H. Slingluff; National Carbon Co., C. W. Wilkins; and Automatic Electric Co., C. G. Williams.

The North Dakota Convention.

The North Dakota Independent Telephone Association held a two-day convention at Valley City, N. D., on Tuesday and Wednesday of this week which was largely attended. The next meeting of the association will be held at Fargo, N. D., next March. The officers elected for the ensuing year are: President, C. H. Coar, of Minot; vice-president L. D. Richardson, of Fargo; and secretary R. P. Baird, of Fargo. A further report of the meeting will appear in next week's issue.

A Letter

Rate of Income—Other Features

By J. C. Kelsey

I received a good letter this week. I am going to pass it on to you for its predominating thought, and its liberality as well.

As you know, Independent telephony came into being with a great rush. The idea of cheap rates seemed to be epidemic, and great profits as well. People were told of the immense profits from a single instrument, one operator and a little iron wire.

Eldorado was discovered—gold was uncovered under everyone's feet. All you had to do was to get enough $1.50 business and $1 residence telephones in your directory, and you had Morgan outdistanced. It was all very simple!

But, today, if the man who invented $1.50 and $1 rates should turn up at a convention, we would ignore him.

It is hard to believe that the inventor of the $1.50 and $1 rates is guilty of the $3 switching charge and free county service. Anyway, we are up against it, and can not escape the folly of the first generation, which swings down through the third and fourth.

If some inspired man could have used the word "service" we never would have needed to cut a single Bell rate.

It was not so much that the Bell rate was high, but the fault was that they did not give service—they had not yet learned that lesson.

The public has gotten both service and cheap rates—doubly blessed—but is it appreciated? Let's read a paragraph of the letter:

"I notice by the morning paper here that a rate expert in San Francisco has made a report that the rates of the Pacific company in San Francisco were too high and he stated they were making 8.25 per cent. profit. He scaled the rates so they would only make six per cent. on the physical inventory value of the property.

"While it is true that they are our competitors, in this case they would just as readily scale our rates if they could. It makes me angry clear through every time a man goes around and says all you can make is 6 per cent. No one would put in money with the knowledge that the ultimate return would be 6 per cent. and yet, practically all the corporations are afraid to say to the people they are making more than 6 per cent."

I certainly would not say that 8.25 per cent. profit was exorbitant. I have been in lots of rate cases, but have always testified to a belief in 8 per cent. and sometimes a justification in 10 per cent. It practically depends upon the market for money.

In a Canadian case I conceded 8 per cent. even to the Bell Telephone Co. In an Oklahoma case I conceded 10 per cent. on account of the pioneering aspects of the country. Any city or state commission which attempts to bring public utility profits down to 6 per cent. will only succeed in enlarging the Ananias Club.

No one would put money into a new and untried enterprise which would never give more than 6 per cent. Such a ruling will stifle every form of constructive work. There are too many people in America to live by maintenance alone.

The writer of this letter, himself a prominent Independent telephone man on the coast, particularly appealed to me when he said that the public would just as cheerfully cut his rates as his competitor's.

There is no gratitude in America except that which is confined to dogs. Kill off the dog in our republic and gratitude is dead.

The public has no more love for its liberators than it has for its enslavers. You have found it so when you approach the public timidly about your $1.50 and $1 rates. Do they rise up and tell you to raise them? Hardly!

And another thing which I have noticed is this: No responsible man, serving in an expert capacity has ever gone on record for 6 per cent. Men who claim this have nothing of their own.

You remember Pat was a socialist and believed in division of property until his old uncle left him a cow and a hog.

If the San Francisco rates are only enough to pay 8.25 per cent. they should surely be allowed to rest in peace.

I have never liked the pleas of (Bell) experts that telephone properties were so dangerous to operate. I hate to see them shedding tears over Toronto fires and 'Frisco earthquakes. They don't happen often and besides, their losses were relatively little!

But I do not see any reason in the world for any city to lower the rate of income below 8 per cent. if every item of income is honestly shown.

If the San Francisco expert was seriously engaged in experting, he would have found more than 8.25 per cent. and then he could have escaped the disgrace of resorting to 6 per cent.

The last part of the letter struck me in the most appealable spot.

Corporations are afraid; they really are; they are timid as school-girls! You all think they are roaring lions, but, in most lawsuits on the question of rates, they appear merely sucking doves.

I never could see what they have to be afraid of. They face inquiries with a hang-dog air which convicts them the first day.

Commissions and controlling bodies will never do justice to a cringing lot of corporation representatives. These bodies do just what the evidence directs them to do. They are human and think as human beings do. Besides, most of these men have property of their own, and they want to earn more than 6 per cent. too.

So the poorest place in the world to adopt a cringing and apologetic air is before a board of control. Instead use common sense and fight for your rights with reason.

When I was a boy, I used to think that big corporations could eat people alive. I am commencing to believe that I can eat them alive, or, at least, the public can if it wants to.

They won't defend themselves with facts. They will cry and beg you not to do anything contrary to their interests.

"I believe no matter how severe the competition, you should tell the public straight out what you think is a fair remuneration on your investment and stick to it and let

them howl if they want to. They would howl if you were making 2 per cent. and would want you to cut it to 1 per cent."

Now here is where our letter-writer is shouting: "Tell the public straight out what you think is a fair remuneration and stick to it." Let them howl if they want to." We all know that these howls only last a few days anyway.

People take other people exactly at what they take themselves for. They really love their magnates, and they are proud of their successes. Like the American soldier, they reserve the right to kick and yet not lose their pride in their flag.

I believe this letter is worth sending to every corporation. This income matter of 6 per cent. is a serious one. One state commission is already wedded to the idea of 6 per cent. for depreciation and 6 per cent. for investment return.

Almost every telephone company will welcome this order, if it is carried out to the letter. But where a company has developed its property to a first-class position and has found it possible to account for depreciation fully and earn 8 per cent., it certainly should fight for its rights.

No stock company should have its stock possibilities reduced to the level of its bonds. Almost every one, these days, finds it difficult to sell 6 per cent. bonds, even when the company earns thrice its bond interest.

Bondholders are innocent purchasers and are held secure. That is why the rate of interest is so low. Stockholders have to put their work in the scale and take what is left. Some years there are profits and at other times there are none.

Even if stock is made cumulative, it is not a living rate—at least it is not an encouraging rate.

In this country where cost of living is so high, and the purchasing power of money constantly decreases, every man must have some incentive besides wages or salary. He is entitled to some consideration in having his savings work for him.

We all brag about him if he invests in real estate and doubles his money. But if he puts his savings into a public utility, we all have a fit if he doubles his money.

It simply gets down to this—an investor will be driven to activities where no restriction lies. Today land seems to offer the least interference from control. Had it not been for some crazy fool promoters, the reclamation of land would offer the greatest hope.

But something always happens to level up things. When a person loses money in some unrestricted enterprise, he is glad to get 6 per cent. in a restricted one, and make no complaint.

"I had to observe recently a valley full of farmers about one hundred miles south of here, who had been getting telephone service from the Pacific company for $1 a year—they of course maintaining their own line. This was the rent of the instrument and switching, which you know is below cost. The Pacific company stated to these farmers they were no longer able to serve them at this rate and asked them to pay $4 a year, which, in their judgment, was little enough. All these farmers involved simultaneously began to turn hand springs and, as far as I know, they are turning them yet. There is no competition where they are and they thought they were being robbed by paying a 400 per cent. increase in their rates, as they put it."

Just think of it! A valley full of farmers getting telephone switching service from the Pacific company for $1 per year!

The Pacific company finally got up nerve enough to ask for $4 per year. Well, well! I do congratulate this Bell company on the progress it is making.

Corporations may face commissions or control bodies with fear and timidity. But they face farmers already whipped.

Is there any reason why any telephone company should switch a farmers' telephone or anyone's telephone at $1 per year? None at all. It is a money-loser pure and simple.

If the Pacific company had to make such a rate to get the business from an Independent competitor, it would have been wiser to have let the competition have it.

Would any of those farmers getting switching service from the Pacific company at $1 per year, sell you any corn at 20 cents when the market was 60 cents?

Just why companies show such insanity or paranoia, I don't know. Even the farmers hate price-cutters. They don't know what price-cutting is. They can't appreciate it at all.

But for the Pacific company, with no competition, to fall for that $1 rate is really and simply pitiable.

My father used to say that if a farmer didn't care to pay his price for a set of harness, he would prefer to let it hang on the wall.

So many men are ruined by cutting prices to get business. Such processes are not only cowardly, but doubly ruinous, that is, if business doubles by reason of the cut, and it usually does, too.

There are numerous Independent companies today who made the fatal mistake of securing telephone subscribers. They made their subscriber list their hobby—but they forget the rate they should charge.

I often think the last president of American Telephone lost out because he had a hobby of securing subscribers, but forgot the income necessary to sustain the enlarged list at a profit.

All increasing business forces the peril of increasing cost. This increasing cost is not confined to the telephone business.

There might have been a time when $1.50 and $1 was enough, but you did not stay at 100 telephones. You grew to 1,000 and to 2,000. But your income did not grow up to $2.50 and $1.50.

Honestly, every telephone in America upon which you collect less than $1.50 a month, is losing money for you. And you get no thanks either, for your unconscious philanthropy!

Now here is another part of this good letter: "If Independent telephony is to raise like a phoenix out of the ashes, you must build it on a sound money-making basis, otherwise it will go to pieces."

Well, Well! This is plain speech. And how fearfully and wonderfully true it is. "You must build it on a sound money-making basis," otherwise it dies!

It is not too late to do this. It is not too late to attack the $1.50 and $1 blight, and get what you are entitled to. It is a question only of fear if you do not proceed.

Your subscribers are much more afraid of you than you are of them. Besides, there is nothing in your charter that allows people to confiscate your property. You have the glorious privilege of the 13th amendment—use it!

Getting back to the word "ashes"—I quite approve of it. We have ashes and we know it.

Not the ashes of a burned-down and ruined property, but the refuse of 15 years of misdirected energies, and a false understanding of our place in life.

We did not start in the telephone business on a crusade basis. We seemed to, for a time. For years we acted as if we were trying to find the Holy Grail. No one seemed to be courageous enough to suggest that we were in a cold-blooded, money-to-be-made business.

So we have the ashes of a great many foolish notions. And we have to rise phoenix-like above them.

Our western friend is broad enough to see that if harm befalls his competitor, it can happen to him also. That has been the great trouble in our business.

Both sides have suffered from the fight, and have received no visible benefits. We have smashed and crashed, and hurt no one but ourselves. The public has stood back and laughed at us. And stood ready to attack either or both sides at the period of greatest exhaustion.

The applause of the public is as fleeting as the praise of a base-ball fan. And their disapproval is just as quick. They forget you entirely when the game is over.

What is more pitiful than a baseball star in citizens' clothes anyway? And what is more pitiful than a broken-down telephone company which has listened to all the unreasonable complaints of the public, and has failed in its duty to its investors?

The public hates failures even though in its behalf!

MORAL: Martyrdom is seldom appreciated.

Practical Telephony for the Practical Exchange Manager

A Series of Articles Relating to the Construction, Maintenance and Operation of a Moderate Size Telephone Exchange, Which Began in the Issue of September 21, Expressed in Everyday Terms, Easily Understood—Principles Easily Applied

By H. R. Van Deventer

Instrument maintenance is perhaps the first apparatus problem which presents itself. As there is not much data available regarding modern common battery instruments, they will be discussed first. At present common battery telephones may be divided into two classes, those having induction coils and the well known receiver with permanent magnet, and those using a so-called "direct current" receiver and no induction coil.

The induction coil type is most expensive in first cost and maintenance. Under some conditions it is also the most efficient. The direct current receiver type is well adapted to general use; is low in first cost and maintenance; and is sufficiently efficient, except on very long lines where the battery supplied to the set is at the minimum and where exceptionally long distance receiving is necessary. In the latter case, the induction coil type is slightly more efficient.

A diagram of the actual wiring of a direct current set is shown in Fig. 33. It will be observed that, the receiver being in series with the line and transmitter, the cord has battery current passing through it. This is the first thing to be carefully examined by straining it out at full in case noise, partial cut-off, buzzing, lost words, etc., are complained of. A broken cord in this set makes it very noisy in transmitting as well as receiving, and is much more noticeable than a similar trouble where the ordinary receiver is used.

Troubles with the direct current receiver itself are rare. The majority of makes consist of a single coil of wire around a small central core having upturned polar extensions as shown in Fig. 34. The Dean company has a laminated core, the majority of other makes use special soft iron. The winding resistance varies from 15 to 60 ohms, the average being about 30 ohms and 600 turns. Sometimes the winding "goes short" and a quick test for this is to feel the "pull" on the diaphragm held edgewise on the core. A weak pull indicates a short. As a check change receivers and note the pull on the one known to be good.

The diaphragm adjustment varies with different makes and is not liable to change. If the proper adjustment is ascertained from the makers, all the receivers of the same manufacture can be checked to this. On a very long line where the current supply is weak, the receiver can be rubbed on a flat block covered with sand paper so as to cut away the edge of the casing and permit the diaphragm to set nearer the core of the winding. This will in some cases materially improve the receivers, but must be handled carefully. It is better to use an induction coil set in these extreme cases.

The switch hook in a direct current telephone having only one contact, is easily inspected and seldom gives trouble. Occasionally the insulation between springs will be punctured by

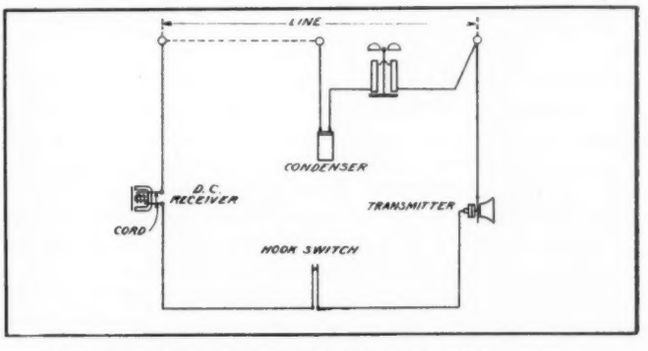


Fig. 33. Wiring of Set Using Direct Current Receiver.

lightning, causing a permanent signal. Removing one wire or taking out the screws that hold the springs to the hook frame, will locate this trouble. The contacts in these hooks should be of platinum, as the spark at the break is considerable. Under average line conditions it is a little greater than that which takes place at the hook contacts of the induction coil type set.

The ringer and transmitter are subject to their usual troubles, which will be described later.

As the condenser in a direct current telephone is not in the talking circuit and does not reinforce the coil action as it does in the induction coil set, it may be of less capacity. In the induction coil set a 2 mf condenser is commonly employed; in the direct current set, a ½ or 1 mf condenser. Where the harmonic ringers are used, a 1 mf condenser is often employed, while on short lines, with 1,000-ohm ringers one-half has given good service.

A "short" condenser will allow battery current to pass through the ringer coils. The clapper will be pulled hard to one side. If removing one wire from the condenser clears the trouble, the condenser should be taken out and "flashed" on a 110-volt direct current circuit in an endeavor to burn out the short. This method is quite successful with modern con-

densers of the Mansbridge type. They employ, instead of tinfoil and paper, a paper coated on one side with metal so thin that, if one layer "shorts" on another, the application of a heavy current will burn out the thin metal contact, thus clearing the trouble.

To employ this method, connect the condenser, a switch, a suitable resistance such as a lamp bank in series and apply a

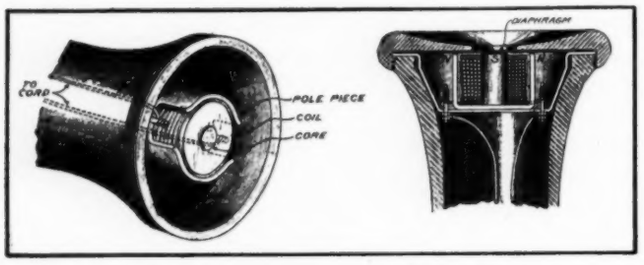


Fig. 34. Construction of Direct Current Receiver.

110-volt direct current. Adjust the resistance so 5 to 15 amperes will flow in the circuit. Close and open the switch rapidly a few times, and the short should disappear, as will be evidenced by the condenser opening the circuit so that the current will cease to flow when the switch is closed. Be careful not to bring the short back again after once clearing it, as may be done by applying the current to the condenser too often. Do not make and break the heavy current circuit at the condenser terminals, as they may be badly burned.

An "open" condenser is a rare thing. The only thing to do with it is to throw it away. It does not pay to open a condenser in an endeavor to repair it.

A "leaky" condenser is one that permits enough direct current to flow through it to give an appreciable deflection on the wire chief's voltmeter. Such a condenser may sometimes be cleared by "flashing," provided the trouble is not caused by moisture. If it is, there is no remedy except to heat the condenser in a moderately warm oven until all the sealing compound runs out, and then reseal. This only applies to the old style condensers with open tops like a dry battery. But few of this style are now manufactured, modern condensers having a tin case with soldered seams and terminals so arranged that ingress of moisture is impossible. Avoid using soldering paste on the condenser terminals or anywhere inside the instrument. It will cause leaks.

The spare condenser which the troubleman carries with him, should not be subjected to dents. They may cause shorts inside it, and even if they do not cause the condenser to leak, will lower its capacity.

(To be continued.)

Oakland to Sue for Bond Forfeiture.

Acting on the report of B. F. Woolner, city attorney of Oakland, Cal., that the municipality had good cause for action against the Bay Cities Home Telephone Co., the council has instructed the legal department, through a resolution to bring an action in the superior court against the corporation, in an attempt to secure the $100,000 bond which it put up with the city in 1905.

Telephones Now in Use in Jerusalem.

The Ottoman government has recently installed a telephone system in Jerusalem for its own use. There are 10 stations, including the Government House, the court house, military headquarters, and several municipal police stations. The matter of a concession for a public telephone service in Jerusalem, Jaffa, and Bethlehem is still in abeyance.

Alfred Stromberg Passes Away.

After an illness of three weeks, Alfred Stromberg, one of the best known figures in the telephone and electrical world, died on Saturday, March 8, at his home in Chicago, apoplexy being the cause. Mr. Stromberg was the organizer of the Stromberg-Carlson Telephone Mfg. Co., now located at Rochester, N. Y., but formerly of Chicago. Later he was president of the Stromberg Electric Co. and prominently connected with the Stromberg Carburetor Co. and the Perry Time Stamp Co., of Chicago.

Alfred Stromberg was born in Stockholm, Sweden, March 9, 1861. His early life was spent in the electrical field, his first experience in telephone work being obtained in the Ericsson factory, at Stockholm. In 1879 he had charge, for the Bell company, of a large portion of the work of the installation of the Stockholm telephone exchange, admittedly one of the most notable and modern telephone exchanges of the world.

In 1885 he entered the Chicago offices of the Bell company, remaining there until 1890, and perfecting during that time a considerable number of inventions, which were adopted by the Bell company. He then associated himself with the Thomson-Houston Co. and, later, with the Chicago Electric Protective Co. When the Bell fundamental patents expired Mr. Stromberg entered the Independent telephone manufacturing field. It was at this time that he organized the Stromberg-Carlson company. He was president of this concern for

Alfred Stromberg.

several years, finally disposing of his holdings in it and taking up other branches of electrical work and development, as indicated above.

Mr. Stromberg leaves a widow and four children, Mrs. Minnie Denniston and Alice, Eva and Emil Stromberg. He was a member of the Union League Club, a Knight Templar and a thirty-third degree Mason.

Proceedings Before Commissions, Courts and Councils

Discussions and Rulings of State Bodies Having Supervision of Telephone Companies, Decisions of Courts in Matters Affecting Public Relations of Utilities, and Actions of City Councils Bearing Upon Franchises, Rates and Service

New Member of Interstate Commission.

John H. Marble, secretary of the Interstate Commerce Commission, has been appointed to fill the vacancy on that board created when Franklin K. Lane entered President Wilson's cabinet. Edgar E. Clark, whose term had expired, was reappointed a member of the commission.

Governor Signs Indiana Utility Act.

What is known as the Shively-Spencer Utility Commission Act, in Indiana, has now been signed by the governor and will become effective May 1.

It creates the Public Service Commission, abolishes the existing railroad Commission and confers the powers of that body upon the new one.

In the main it follows the provisions of the Wisconsin Commission law. There are, however, several points of difference which will be discussed next week in these pages.

All telephone and telegraph companies come within the scope of the act.

Grace to April 1 at Indianapolis.

By the terms of an agreement reached between the Indianapolis board of works and the Indianapolis Telephone Co., the latter will be given until April 1 before it need begin improvements ordered by the board. During the interim the board will consider the matter further and may extend the time limit.

Under the franchise the company was compelled to make improvements costing $500,000 and these improvements were to include the installation of a new switchboard.

For a long time the order to install the switchboard was deferred by the board pending the negotiations for the merger of the two telephone companies in the city, but this proposition being apparently dead, it is held that making the improvements and installing a new switchboard is absolutely necessary to preserve effective competition with the Central Union Bell.

Proceeding in Seattle Grand Jury Inquiry.

Before taking a recess until March 24 the federal grand jury at Seattle, Wash., which has been investigating telephone and telegraph mergers, directed the impounding of a large mass of records of the Western Union Telegraph Co. These records, it was asserted, are destroyed at regular intervals by the telegraph company and it was feared by the inquisitors that the documents would not be available when the investigation was resumed.

Among other things considered by this grand jury were the charges made of discrimination against Independent toll lines in favor of the lines controlled by the Pacific Telephone & Telegraph Co.

H. J. Roake, of Portland, auditor of the Northwestern Long Distance Telephone Co.; Jay Bowerman, formerly acting governor of Oregon and now attorney for the receiver of the Northwestern company; and H. D. Pillsbury, of San Francisco, general counsel for the Pacific Telephone & Telegraph Co., were the witnesses examined by the grand jury on this point.

The officers of the Northwestern Long Distance company declared that patrons of systems having both long distance connections, who had requested long distance service over the Northwestern lines had been switched onto the Bell lines and that calls which would naturally go to the Northwestern were regularly diverted to the Bell system.

The Northwestern officers stated that when the Bell interests absorbed the Independent companies in Seattle. Tacoma and Bellingham, the Northwestern lines were deprived of nearly all their business in those cities.

It was said that the month before the merger in Tacoma the Northwestern long-distance receipts in that city were $1,100 and that the month after the merger they dropped to $1.45 and the succeeding month to 25 cents.

The Northwestern long-distance receipts in Seattle showed a similar tendency after the merger there. Before the Independent company was taken over by the Pacific the Northwestern's long-distance receipts in Seattle were $2,000 a month, but since the merger they have dwindled to $400 a month.

Another complaint being investigated by the grand jury is that the farmers' lines, which had been doing business independently, have been compelled to make exclusive connection with the Bell lines or be entirely cut off from the cities.

Municipal Telephone Systems Discussed at Seattle.

Municipal telephone systems for Spokane, Tacoma, Portland, Seattle, and any other cities in Oregon and Washington which may wish to adopt such a system and combine with the others to form the nucleus of a long-distance telephone system, were recently discussed at an informal meeting in Seattle, Wash. Mayor Cotterill presided, and Superintendent of Public Utilities A. L. Valentine, Superintendent of Lighting J. D. Ross, City Electrician Howard Joslyn, Councilmen E. L. Blaine, Charles Marble, Austin E. Griffiths, Robert B. Hesketh, Oliver T. Erickson, John G. Pierce and A. F. Haas were present to represent the interests of Seattle. Mayor W. W. Seymour of Tacoma, and Commissioners Lawson, Freeland and Miles from that city, and Samuel Hill, president of the Home Telephone Company of Portland, Ore., urged the necessity of competing telephone systems in all cities. No definite action was taken.

Bemis Reports on Chicago Rate Reductions.

E. W. Bemis, investigator for the Chicago council committee on gas, oil, and electric light, was instructed at the last meeting to report to what extent the rates for residence party and business party service could be lowered by distributing the company's surplus between them. This report was made this week.

"The company met the proposal for reductions with a statement that if any of the nickel telephones are profitable it is those of the nickel-first type," Mr. Bemis explained, "and a further study showed me that 18 per cent. more time is necessary to answer calls from the nickel-last telephones than the nickel-first."

He proposed, therefore, that those having telephones be given a reduction to four cents on all excess calls, provided they adopted the nickel-first type and relinquished the others.

Mr. Bemis said that, where advantage is taken of the price of calls in addition to the guarantee of one call a day, the subscriber must give up the right to a refund of

cash paid when his coin box receipts fall below the guarantee one month and go above it the following month. He computed the total effect of this reduction as $73,000, although he qualified by saying a less number of subscribers than he figured might accede to the nickel-first condition.

His recommendation regarding business party service was, in effect, a suggestion that single party measured service be substituted for the two party service now guaranteeing two five cent calls a day.

He proposed the company give 800 calls a year for $40, which is a rate of five cents a call and an average of about 2½ calls a day. The next 200 calls, he said, would be at the same rate, and all calls in excess of this 1,000 would be at the rate of three cents each. He did not follow out a previous suggestion of the committee for a reduction of the guarantee in the two classes of service as they are now operated.

The discussion will be resumed later. If the ordinance is not passed before the seating of the new council, it was predicted the new committee could not take up the matter and dispose of it before June, and the passing of the third anniversary on which the new rates could have been put into effect.

Exclusive Contract Case to Supreme Court.

The United States Telephone Co. of Ohio., whose appeal for an injunction against the American Telephone & Telegraph Co. and the Central Union Telegraph Co., restraining the latter from interfering with long distance contracts between the United States company and Independent telephone exchanges in Ohio and Indiana towns, was recently denied by the circuit court of appeals, in Cincinnati, has applied for a writ certifying the case to the Supreme Court of the United States.

The case, which was brought by the United States Telephone Co. in the federal court for the northern district of Ohio, in 1908, was decided adversely to the complaints by the late Judge Robert L. Taylor, at Toledo, on May 20, 1909. In his decision Judge Taylor held that to destroy the Bell monopoly would be to create another held by the United States company. The Court of Appeals recently affirmed this decision, the latter court's decision being printed in full in these pages.

Toledo Fixes Rate for Bridge Conduit.

An ordinance has been passed by the Toledo, Ohio, city council authorizing the service director to contract with the local telephone companies for the use of conduits on the Cherry street bridge. The ordinance provides for a rental of seven cents per duct foot per year for conduits used and three cents per duct foot per year for conduits reserved.

The Cherry street bridge is the magnificent new structure being built at an expense of nearly $3,000,000, to cross the Maumee river, at Cherry street, connecting East Toledo with the business section of the city. While the bridge will not be completed for a long time, one section has been finished for use and will be opened within a short time.

Utility Bill Passes Minnesota House.

The Minnette public utilities bill has passed in the Minnesota house by a vote of 103 to 3. An amendment removing the physical connection provision was overwhelmingly defeated.

The bill places all telephone companies operating in the state under the control and jurisdiction of the Railroad and Warehouse Commission. The act also makes physical connection between rival lines mandatory when demanded.

Several amendments to the bill were offered, but only two submitted by Representative Minnette, its author, were permitted. The principal amendment offered by Mr. Minnette allows merger of competing companies on a vote of the voters of the municipality.

The measure now goes to the senate. It is the bill recently endorsed by the Minnesota Independent Association.

Berkeley Loses Anti-Merger Suit.

Judge William H. Waste has dismissed the suit of the city of Berkeley, Cal., against the merger of the Pacific Telephone & Telegraph Co., and the Home company. Demurrers to the suit filed by the company were sustained by Judge Waste several weeks ago, and the failure of the city to amend its complaint was taken as sufficient ground for striking it from the docket.

Judge Waste ruled in favor of the company on the ground that laws supporting the feature of the Home company's charter forbidding the sale to a competing company were not in force at the time of the grant of the charter, and that the supreme court has ruled that a city has no right to include provisions in its charter grants which cannot be legally enforced.

Wisconsin Tax Will Probably Be Unchanged.

Wisconsin will probably continue its present system of taxation of telephone companies for the next two years at least. This seems practically assured as a result of the action of the joint committee on finance, acting with the assembly committee on transportation, in voting unanimously to recommend indefinite postponement for the Teasdale bill to tax telephone companies on the advalorem basis.

The present law provides for taxation by the license fee system. The assembly committee on transportation also voted adversely on the Hedding bill reducing the license fee rate of taxation on telephone companies. This measure, it was said, would have reduced the Bell company's taxes by upwards of $40,000 and placed a higher burden upon the smaller companies.

Wisconsin Assembly Turns Down Two Telephone Bills.

The Wisconsin assembly failed to pass the Teasdale bill providing for the taxation of telephone companies on the ad valorem basis. It also killed the Hedding bill fixing the annual license fee of all telephone companies at $15, together with a fee based on the net earnings. This bill was so graduated that it was calculated to cut the taxes of the Wisconsin Telephone Co. approximately $40,000 in the state.

Telephone Swearing Not Cause for Action.

Profane and harsh words when heard over the telephone are not a basis for legal damage action in Iowa, says a Des Moines, Iowa, dispatch.

This decision of the Iowa Supreme Court was handed down in a case in which Nettie Kramer, of Franklin county, sued Henry Ricksmeier for damages on account of "fright, shock and humiliation." The trouble arose over the trespassing of Kramer's cattle, Ricksmeier delivering his unexpurgated opinion of the same into the plaintiff's ears via the telephone wire.

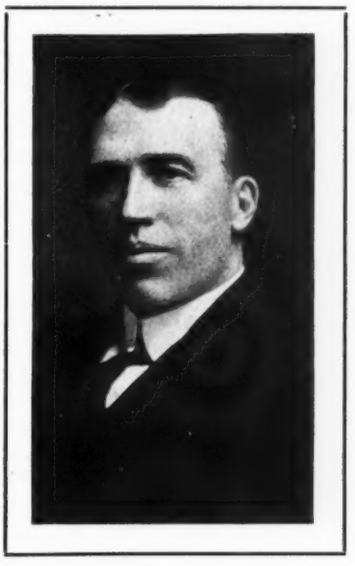
City Appeals Pole Tax Decision.

The city of Springfield, Ill., has taken appeal from a ruling by Judge Creighton, in the circuit court, forbidding the collection of a pole tax from the Central Union Telephone Co. The city levied a pole tax of $1 a year on each pole within the corporate limits. The telephone company contested the ordinance and Judge Shirley ruled against the city. The case will be heard in the appellate court.

A Quartet of Men Prominent in the Telephone Field

FRANK BARR HALL is a telephone engineer and a manufacturer of telephone specialties, at Newton Falls, Ohio. His latest notable commission was estimating the cost of a municipal plant for the city of Seattle, Wash., which he finished in the latter part of 1912. He had previously served (1910) on an appraisal commission for Seattle. Mr. Hall was born in Rimersburg, Pa., May 19, 1861. He is a Mason—a Shriner—and an Elk. In 1880 he went with the C. D. & P. T. Co., of Pittsburgh, remaining in its employ for 18 years, beginning as lineman. The last 15 years he was district superintendent of construction. He has since acted as engineer for scores of Independent companies, including the National companies, of Wheeling, W. Va., and the Stromberg-Carlson company. He was a pioneer in all-cable construction, the National Telephone Co. in Wheeling, being the first complete plant of the kind in the United States, Salt Lake City, Utah, being the next large system, which he also installed. He has had many patents granted on telephone apparatus and specialties, and is the compiler of Hall's Handbook of Standard Telephone Construction Methods.

FRANK H. BRACE, of Springville, N. Y., manager of four exchanges for the Federal Telephone & Telegraph Co., of Buffalo, was born in Flint, Mich., March 17, 1863. He supplemented his high school education by taking, in 1900, a correspondence course in electrical engineering. From 1878 to 1882 he manufactured acoustic telephones, installing them during vacation periods. From 1883 to 1887 he was a contractor and builder in Lockport and Springville, N. Y., when he was elected superintendent of the Springville Electric Light Co., which position he held for 13 years. In 1900 he secured a franchise and organized the Springville Telephone Co., of which he was vice-president and manager until 1906, when it was sold to the Federal. He was then made manager, which position he has since held. He has assisted in organizing the West Valley company, the East Concord company and the Rural company. Mr. Brace is a Mason, a Knight Templar and a member of several other orders, of the Springville Club, the Board of Trade. He is an alderman and chairman of the municipal electric light department.



ROME C. STEPHENSON, formerly manager and general counsel for the Rochester (Ind.) Telephone Co., and the Mackinac Telephone Co., Mackinac Island, Mich., is now vice-president and treasurer of the St. Joseph County Savings Bank and the St. Joseph Loan & Trust Co., at South Bend, Ind. He is still interested also in the law firm of Holman, Stephenson & Bryant, at Rochester. Mr. Stephenson was born in Wabash, Ind., February 19, 1865. In 1884 he began to study law, was admitted to the bar in 1886, later forming a partnership with George W. Holman. He practiced his profession until November, 1908, when he removed to South Bend. In 1895 his firm organized the Rochester Telephone Co. and built the plant, of which Mr. Stephenson became general manager. In 1898, he and Mr. Holman secured a franchise to build on Mackinac Island, completing the plant the next year. He was president of the Indiana association in 1903 and 1904. He is a member of the state and county bar associations, South Bend Chamber of Commerce, a 32 degree Mason, an Odd Fellow, a K. P. and other local organizations.

EDWIN L. HARMAN, secretary and manager of the Disko & Laketon Telephone Co. and the Akron Telephone Co., having his headquarters at Disko, Ind., was born November 1, 1876, in Miami county, Ind. He supplemented his common school education with courses in the Manchester College and the Ada (Ohio) College. Born on a farm, he followed farming for some time. He has also dealt largely in real estate and has considerable holdings at this time, besides being interested in banks and banking. He has served his town, of Disko, as postmaster. He organized the Disko & Laketon Telephone Co. in 1903 and 1904, taking office at the start as secretary and manager and continuing as such since then. Later he bought control of the Akron Telephone Co., assuming the same offices in it. He is a heavy stockholder in both companies. Since engaging in the telephone business Mr. Harman has improved and extended these systems constantly, now having lines connecting Gilead, Ijamsville and Athens with Disko, Laketon and Akron. He is a member of several orders, among them being the Masons and the Gleaners.

Specifications and Tests on Telephone and Telegraph Wire

The Fourth of a Series of Articles Dealing with the Essential Properties of Wire—The Various Tests for Copper-Steel Wire—Weatherproof Braiding—Requisite Points in Manufacturing to Obtain Satisfactory Wire

By Hugh T. Wreaks and E. J. Jones
Wire Inspection Bureau

Aside from the weld the durability of the wire depends largely on the unbrokenness of the copper covering. A careful surface inspection is necessary to determine that the copper coat has not been damaged in rolling or drawing so as to expose the steel, or that in the hot rolling process the material has not been lapped. The laps may open up and form burrs or splints or may even be stripped off so deep as to allow moisture to attack either the steel or alloy.

It has been claimed by some that after a careful surface inspection has been made, it is good practice to try for exposed steel by coating a sample with a prepared solution of gelatin water, sulphuric acid and potassium ferri-cyanide. Exposed steel will show up as a blue discoloration on the gelatin. This test is of the nature of similar tests on galvanizing by immersions in copper sulphate solution and tests which are made on tinned copper by immersions in hydrochloric acid and sodium sulphate solutions. The two latter tests have been standardized, while the gelatin, sulphuric acid, potassium ferri-cyanide test has not.

Surface inspection is also necessary, even more so than in the case of hard drawn copper, to determine, if any, the presence of splints. laps, inequalities, charred copper or other surface imperfections that may occur. Each coil should be gaged in at least three places, near each end and in the middle of the coil. The average diameter of the wire should not vary from specified gage more than 1 per cent. in the large and 2 per cent. in the small sizes. The wires should be cylindrical and be free from any of the previously mentioned faults and the distribution of the copper should be fairly uniform.

A sufficient number of coils should be tested for tensile strength, elastic limit, torsion elongation, resistance per mile or conductivity, and weight per mile, to see that it meets specification requirements. As previously shown on small wire for pair work, each coil should be tested for resistance and grouped and tagged for pairing.

Tests for elastic limit are very important. These do not present the same difficulty here as hard drawn copper as the action of the steel under strain shows a pretty clearly defined point where the rate of elongation changes under constantly increasing strain. Much care and experience is necessary in making these tests as the alloy and copper coating do not show this point so clearly.

The average weight of coils for shipping is between 100 and 200 pounds, and the same care should be exercised in handling and packing for shipment as for other bare line wire. The same remarks also apply in regard to burlapping as for bare copper wire, also use of especially prepared paper cloth should be urged on sea shipments to prevent any action of the copper.

Up to the present time the writers have no knowledge of standard specification giving tables showing proper elongation or torsion requirements for the various sizes of copper-steel wire. But through personal experience and observation of a great number of tests an elongation of from 1.5 to 2.5 per cent., according to size, is quite possible without in any way affecting other qualities of the wire. However, there should be some hesitation before requiring more than 1.5 per cent. until more accurate information is obtainable. It is the intention to start gathering data relative to both of these requirements at once, and the writers expect shortly to be in a position to give definite advice regarding it to anyone who is interested.

Weatherproof Braiding.

As the braiding on galvanized iron, copper and copper clad wire all serves the same purpose, the question of weatherproof braiding inspection, specifications and tests can properly be taken up in one article for all these materials.

Weatherproof braiding serves two purposes. Primarily, it is an extra protection against injury to or contact with the metal wires underneath. It should also increase the life of the wire and its service value by being a further protection against corrosion. It is called for generally in locations where bare wire is objectionable on account of possible contact with wires of higher potential, or some similar reason. On account of the greater weight, cost, and lesser tensile strength of weatherproof wire as compared with bare wire, it does not compete with bare wire for general use. Whatever its function, this can only be served as long as the various braids and the weatherproof compounds they contain are substantially intact. Anyone who takes occasional walks through the country and notices various braids hanging from telephone and telegraph wires knows how frequently such braids are practically useless after a few years of service.

The point is whether this is a necessary condition of the service, or some defect in material, construction, or in handling. Judging from service value of various braided wires, it seems that such condition is entirely unnecessary. When braided wire is called for, frequently two braids are specified instead of three, and it is safe to say that it is much more difficult to manufacture a two-braided wire that will give good service than is the case with one or three braids.

In analyzing what takes place in the treatment of braided wire and the service conditions, as described later, the reason for this will be plain. Briefly, after the braid has been placed on the conductor, it is dipped in wax heated to such a temperature and so fluid that it saturates the braid, the more completely the better. With three braids, this saturation is sometimes done by a two-dip process, and the use of wax of differing characteristics. The saturated or waxed braided wire is, before shipping, run through a finishing process by which the outer surface is made smooth and polished.

Now when the braided wire is put into service, under the influence of the hot sun, the wax tends to melt slightly at top of wire, and with certain waxes and conditions it will melt sufficiently to run. Then the rain comes and is absorbed by the braid in just the proportion the wax has melted out. This tendency is increased if the finish of the wire or waxed braid is rough so as to allow miniature puddles or drops of water to remain on the wire. The process, once started, is accentuated with each hot sun and rain and further influenced by cold, snow, and hail, until the braid is absolutely rotten and starts to peel off in strips. Again the nature of the braid has some affect, as good cotton had little tendency

to absorb moisture, while jute is always sensitive to moisture, no matter how thoroughly saturated with wax.

The quality of the cotton, as regards strength, toughness and weave is also important. A close weave with not too angular a lay will cover the conductors more completely and, together with quality of cotton, will make a better protection against mechanical injury.

As this material is sold by weight, it, in a measure, covers this point, as it is to the advantage of the manufacturer to have ample quantity of braid. But unfortunately, quantity as judged by weight and quality are not synonymous, and the writers have found it good practice to determine quality of braids by testing their strength with the wire bent around an easy curve.

It is also well to make moisture absorption tests to determine the amount of moisture given braids will absorb in 24 hours.

The high temperature test, saying that wax will not slide at a temperature of 125 deg. Fahr. for 30 minutes, is of value. Yet this test so little approximates service value conditions as to raise the question, how far will this insure wax from melting ultimately, and water working in and rotting the braid? As an alternative, the wax which meets this temperature condition may be so hard as to cause the wire braid to crack in handling, especially in cold weather. This may be guarded against to a large measure by a guarantee from the manufacturers, and it is affected by the processes they use. A slight increase in price should allow this point to be taken care of.

One method of saturating consists in what is known as the two-dip process. This is used on a three-braid wire. Two braids are first put on and saturated with a wax which forms a hard compound and is capable of withstanding high temperatures. It is possible without danger of cracking on account of the protection afforded by the outer braid. The outer braid is then saturated with a softer compound. It will not stand such high temperatures without melting, but is pliable in handling. A smooth finish and high polish is given the wire so that it presents practically no irregularity or places where drops of water could lodge, no matter how small. A hot sun on such a wire tends to soften the wax in the outer braid. The wax is prevented from running by the hard dense wax underneath, so that as the sun goes down the soft wax cools, leaving the braided wire practically unaffected. To the same extent the high polish causes rain to run off rather than accumulate and presents less holding space for snow or hail than a rougher surface. And as long as the preservative wax remains in substantially its original quantity, the braid deteriorates very slowly.

The prevention of braided wires from fraying out is extremely important in some locations where the laws are strict, calling for at least this much insulation on telephone and telegraph wires, and leaving a measure of responsibility on operating companies in case of injury to persons or property unless this insulated condition is maintained.

The packing for shipment of weatherproof wire is, as judged from the preceding paragraphs, just as important as for bare wires. The protection from mechanical injury is usually carried out substantially along similar lines.

In considering the preceding articles on galvanized iron wire and copper wire and copper-steel wire, both bare and weatherproofed, and the various specifications and tests enumerated, it must be borne in mind that any specifications and tests of this kind are in a measure empirical. In order to get best service value for the material mentioned, the specifications and tests should be handled along a comprehensive plan, allowing for proper records and also giving a share of consideration to prices quoted and reputation of manufacturers. When this is done, properly designed specifications and tests, i. e., those not drawn up along extreme lines, become of considerable value to the purchaser and allow for a service value of wire, which so distributes the purchase price over a term of years as would really mean a cheaper material.

On the other hand without such a plan, the user, in case of line failures, is unable to determine whether the failure was properly due to some inherent defect in the manufactured goods, or to injury in handling and installing, or to unusually severe service conditions. This is a situation of some embarrassment, especially with the labor element on outside work necessarily under limited control and frequently ready to take advantage of any loopholes, and to blame on the material their own shortcomings. It will therefore seem that the points brought up are well worth consideration and discussion by those interested in the subject of safe and economical operation of telephone and telegraph wires.

(*To be continued.*)

Manufacture and Maintenance of Electric Storage Batteries

Paper Presented at a Technical Session of the Sixteenth Annual Convention of the National Independent Telephone Association—The General Facts and Principles Relating to the Efficient Use of Storage Batteries in Telephone Service—Concluded

By H. M. Beck, Engineer, The Electric Storage Battery Co.

Floating is a term applied to a method of operation now used quite largely, especially in the case of the larger offices. Where practical it is always advisable to charge a battery during the heaviest part of the office load. Where this is done and the battery becomes fully charged while there is still a heavy office load, it often pays to continue running the generator, at the same time reducing the voltage so that the battery, although floating across the terminals will lie idle. The slight charges and discharges balance one another, and the battery simply acts as a regulator on the generator. With this arrangement the same results are accomplished as when charging through the heavy loads, namely, the generator carries the office load direct. Since the current does not have to be stored in the battery, this loss as well as some added depreciation is eliminated.

The proper adjustment for floating is to reduce the voltage across the battery to an average of 2.1 volts per cell. At this pressure the battery will automatically take care of itself, the charges and discharges balancing each other so as to keep the cells in a fixed condition.

When discharging the point to be guarded against is overdischarged, that is, discharging too long. As already explained, the voltage and gravity discharge limits are arbitrarily fixed as a result of experience, and it has been found very injurious to the plates to discharge them any further. The usual discharge voltage limit is 1.75 volts per cell with normal rate of current flowing. The gravity limit varies with the type of cell, but averages about 35 points drop below the maximum.

For checking the discharge, the gravity readings is much more valuable than the voltage, due to its being independent

of the current rate flowing. The voltage only need be watched occasionally as a check. Where the voltage falls below the limit before the gravity limit is reached, it is an indication that the battery has not been properly charged, or if so, that its capacity has decreased so that the number of points drop corresponding to the capacity will have to be also decreased.

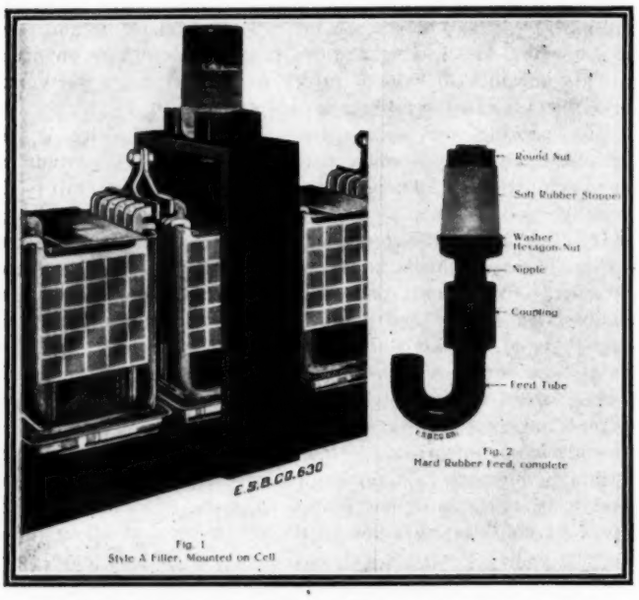


Fig. 1
Style A Filler, Mounted on Cell

Fig. 2
Hard Rubber Feed, complete

Pilot Cell Automatic Water Filler for Glass Jar Cells.

In other words, the number of points in gravity which can be taken out of a battery on discharge must always be limited, so that the minimum voltage limit will never be passed.

It is not always appreciated that the fall in the specific gravity of a storage battery is almost directly proportional to the ampere-hour discharge, so that the specific gravity readings constitute a very good ampere-hour meter. For example, if the gravity drop corresponding to a complete discharge is 35 points and a reading taken at any time shows a drop of 20 points, it indicates directly that the cells are a little more than half discharged, or in the ratio of 20 to 35.

In telephone service, as in many other classes of service, the common practice is to re-charge the cells after about one-half of the capacity has been taken out. This practice on the one hand prevents too frequent charging and gassing of the cells, while, on the other, it always provides reserve to take care of irregularities or emergencies where the charging source fails.

Where specific gravity readings are used for checking the charge and discharge, a pilot cell should be selected whose readings are taken to represent the rest. Readings might be taken on all of the cells, but this would entail a great deal of labor, and experience has shown that it is not necessary. We find there is a good deal of neglect regarding the pilot cells, so it will probably be well to go into this rather carefully.

For convenience a pilot cell should be accessible, but preferably not the end cell of a row, as these cells are subjected to rather irregular conditions. Where the cells of a battery are in different conditions or of different ages, one of the oldest or least efficient cells should be chosen, as the battery must always be charged sufficiently to keep up the least efficient member. The cell should be well lighted so that readings can be easily taken. Where, as is very generally the case in telephone service, the tanks are not equipped with the full number of plates, thus allowing room for future expansion, the pilot cell should be supplied with a displacing block or tank for the purpose of displacing the excess electrolyte in the vacant end of the tank and reducing the quantity of the electrolyte to that normal for the number of plates installed. Where there is excess electrolyte and the pilot cell is not equipped with a displacing block or tank, the specific gravity variation for a given discharge, will be very much reduced, so that the readings will not constitute a very accurate check on the amount of charge or discharge. For example, where a cell is only half filled with plates, the gravity drop corresponding to a complete discharge will be less than half normal, so that a comparatively few points drop in gravity corresponds to the capacity limit and it is not therefore easy to check the limit very definitely.

The specific gravity of the electrolyte in a cell varies not only with the charge and discharge, but is also directly influenced by the amount of water in the cell, and the temperature of the electrolyte, entirely independently of the amount of charge and discharge. In other words, if we were to take a jar of electrolyte without any plates in it and add water, we would reduce the specific gravity reading. Likewise, if we were to change its temperature, we would change its specific gravity readings, and this would have no connection with the charge and discharge. Since we wish the reading of the pilot cell to represent charge and discharge only, it is necessary to take certain precautions in order to eliminate or correct these other variables.

The amount of pure acid in the electrolyte is fixed, but the amount of water mixed with it varies with the evaporation, or in other words, with the height of the electrolyte. Thus, if it is desired to eliminate this variation, the height of the electrolyte must be kept fixed. This is accomplished in several ways, and is the point most neglected in connection with the pilot cell. It might be added that unless the level of the electrolyte is kept fixed, the pilot cell readings are of no value, actually misleading, and it would be better to leave them out entirely.

The simplest method of keeping the height of the electrolyte at a fixed point, is to mark a convenient height by hanging a small strip of lead over the edge of the jar, or by a line of paint on the outside. Sufficient water is then added to the pilot cell at least once a day to keep the height of the electrolyte accurately at the mark. In this way so little water is added at any one time that its effect on the gravity readings is inappreciable.

Another and still more accurate method is to install an automatic water filler which has been developed for this special purpose. A device for this purpose has been on the market for some time past, on the principle of a valve controlled by glass floats. This, however, had moving parts and required some attention to keep in good working order. On this account, considerable effort has been made to improve it with the result that quite recently a new type has been brought out. This improved filler is based on the general principle of the common inverted jar poultry drinking fountain, but with necessary refinements in order to render it sufficiently accurate. The filler has no moving parts, and from this standpoint, is certainly a decided improvement over the old one. All the attention required, outside of an occasional cleaning about once in six months, is to keep the reservoir filled with water.

Correction for the variation of the electrolyte with temperature can also be handled in several ways. If when taking specific gravity readings, a temperature reading is also taken and by means of a temperature correction table, the specific gravity is always correct, to what it would be at some standard temperature, say 70 degrees, the variations due to changes in temperature will be eliminated. The same result can be accomplished automatically by using a compensating hydrometer, an instrument so designed that it automatically corrects the readings for temperature and eliminates this error.

The points which have to be looked out for in connection with the pilot cell are not difficult to handle, and if desired, automatic devices can be obtained to take care of them. It

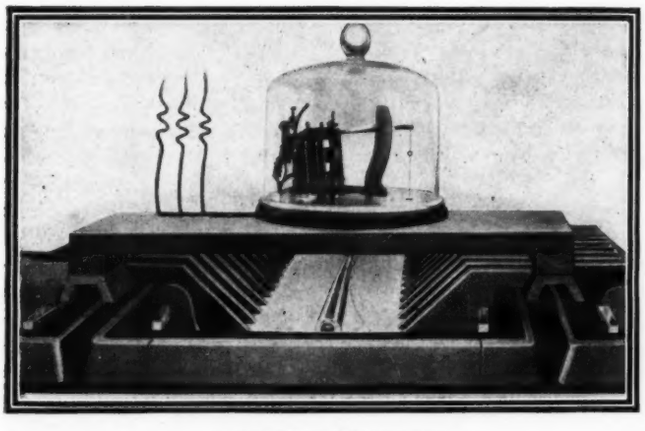
can not be emphasized too strongly that unless these corrections are taken care of, the pilot cell method of operation will prove of little value and actually misleading.

The prevention or detection of short circuits, call for a regular system of inspections and readings, which must be gone through as a matter of routine, no matter whether the cells seem to be operating all right or not. Neglect of this general principle is responsible for a large part of the abuse in telephone service. The tendency is rather to leave the cells alone as long as they will operate and until they fail, and this practice results in serious injury as already explained.

The necessary inspections and readings are covered in detail in the regular instructions, but there is one inspection which I think has hardly been emphasized sufficiently and its value not generally appreciated; namely, the so-called gassing inspection. This is one of the easiest and quickest inspections to make and one of the most sensitive in indicating trouble in the cells, so that even where all the rest are omitted, the gassing inspection should be carefully made.

Where the cells are in good condition, which means uniform condition, they should all begin to gas at the same time, towards the end of charge. Where they start gassing irregularly, something is wrong in the cells which are behindhand. These have evidently had more discharge than the cells which come up promptly. Since the external discharge of all the cells is the same, the explanation is usually an internal discharge due to a short circuit and a careful investigation should be made at once. The gassing inspection only requires a few minutes at the end of charge. All that is required is to look over the cells when they first begin to gas in order to see whether they are uniform and, if not, to note any which are behindhand so as to investigate the trouble at the first opportunity.

Keeping the plates covered with electrolyte should be a simple operation, but for some reason it is very frequently neglected. There is a continual evaporation going on from the electrolyte, which must be replaced at intervals by the addition of pure water, or the electrolyte will fall below the tops of the plates. If the plates remain exposed to the air for any length of time, they lose their charge and are likely to be injured. As water alone evaporates in the electrolyte, pure water alone should be used for replacing and never acid or electrolyte. For some reason, there is an idea abroad that acid is lost and that therefore it must be replaced by the addition of acid to the cells at intervals. A great deal of trouble has resulted from this misunderstanding.



A Signaling Hydrometer.

There is a very slight loss of acid, but this is so slight that it can be practically overlooked, as we almost never run into any trouble from too weak electrolyte. On the other hand, too strong electrolyte, resulting from continual addition of acid, is likely to injure or ruin the plates. Except where acid is actually lost, as in the case of the broken jar, the safest plan is to write the manufacturer and get his advice before adding anything but water to the cells.

In closing, a word or two regarding the manufacturer's attitude towards plants in service. Our interest does not cease with the sale. We are deeply interested in assisting you to get the best results from your batteries. For many years we have maintained at a very considerable expense an operating department to look after this work; answering inquiries, furnishing instructions, making inspections, looking over battery reports, etc., and we hope that you will not hesitate to call upon us whenever we can be of any service in this direction.

Telephone Men in the A. I. E. E.

The March issue of the Proceedings of the American Institute of Electrical Engineers reports the transfer of the following telephone men to the grade of Fellow at the meeting of the Board of Directors: Recommended for transfer by the board of examiners, F. L. Rhodes, outside plant engineer, American Telephone & Telegraph Co., New York; transferred in accordance with the special section of the constitution, W. L. Campbell, general superintendent, Automatic Electric Co., Chicago; John J. Carty, chief engineer, American Telephone & Telegraph Co., New York; W. B. Jackson, consulting engineer, Chicago; C. E. Scribner, chief engineer, Western Electric Co., New York; B. E. Sunny, president, Chicago Telephone Co., Chicago, and H. S. Warren, electrical engineer, American Telephone & Telegraph Co., New York.

The following were transferred to the grade of member, in accordance with the special section of the constitution: Gerald Deakin, Western Electric Co., Antwerp; J. T. Frankenberg, chief engineer, Providence Telephone Co., Providence, R. I.; and C. W. Sharer, superintendent of equipment, Keystone Telephone Co., Philadelphia.

Associate members were elected as follows: Alfred Carlson, special inspector, Central Union Telephone Co., Chicago; R. C. Darrow, assistant in engineering department, American Telephone & Telegraph Co., New York; S. B. Kent, telephone engineer, Western Electric Co., Chicago; J. P. Kobrock, division plant engineer, Missouri & Kansas Telephone Co., St. Joseph, Mo.; and A. H. Schirmer, telephone engineer, American Telephone & Telegraph Co., New York.

To Spend Twenty-two Millions on Italian System.

A plan has been submitted to the Consigli dei Ministri, of Italy, for the expenditure of $22,500,000, spread over several years, on the systematization and extension of the Italian telephone system, says Telegrafia e Telefonia. The projected operations comprise the building of many new up-to-date exchanges, great additions to the plants in each city, and its entire conversion to the underground system. The automatic and semi-automatic systems are also to be largely introduced.

Telephone Poles are "Spooky."

That white telephone poles in front of his house seemed so much like specters he did not dare to go out at night was the assertion of an Oak Park, Ill., man, who recently told his troubles to the village clerk and asked if there was not some ordinance compelling the company to paint the poles green or black. He said the white poles at night give the village the appearance of a city of the dead.

Pacific Bell to Transfer Nevada Properties.

The Bell Telephone & Telegraph Co., of Nevada, has been incorporated, with a capital stock of $500,000. The new company, it is stated, will take over all the Nevada properties of the Pacific Telephone & Telegraph Co.

Every Telephone Company Needs an Accounting System

Expert Telephone Accountant, in Instructive Paper Read at Illinois State Convention, Points Out Necessity for Some Method of Accounting—Its Bearing on Reports to State and Government Bodies, as Well as on Securing of New Capital

By John W. Coffey

Since it was first learned that the Interstate Commerce Commission contemplated a uniform system of accounts for telephone companies, there has been more or less discussion and no little complaint.

Whether the commission's schedule of accounts be absolutely right or wrong, I realize that before it could possibly outline a system that would be unanimously approved, the historical days of miracles would have returned and then, no doubt, there would be some question.

In my several years' experience in the telephone accounting field, I have seldom found the ideas of any two men exactly the same. There are as many ways of handling accounts as there are ways of trimming a woman's hat. Local conditions are more or less responsible.

The exceptions taken to the commission's first announcement (Circular No. 30) were many, and to have been in Washington and read all of the suggestions and complaints that immediately followed I imagine would have been amusing and, if taken seriously by the commission, would have led it to believe that what it knew about telephone accounting could easily be written on the back of a postage stamp.

There were, no doubt, many good suggestions and a number of legitimate complaints registered, and had I been entitled to a voice in the matter I also would have been guilty of adding to the large collection. While the commission, no doubt, received more suggestions and complaints than it anticipated, it failed to hear the real noise—that made by the smaller companies, or those who consider accounting a useless expense.

Some Accounting System Absolutely Necessary.

The latter class is to be pitied. I have been present on one or two occasions when they wakened up, too late, however, just as does the boy who succeeds in convincing his father that he can get along without an education and later finds himself at sea with a broken rudder.

The plant can be built, service rendered, collections made and properly deposited in the bank, all without the formality of bookkeeping. So long as the receipts are sufficient to meet the running expenses and care for the natural growth, the stock holders may be satisfied for a while, believing that their earnings are being used to develop the plant. But the day is soon at hand when more modern equipment is necessary to render good and commercial service or to meet competition. How is the stock-holder going to be kept satisfied or induced to invest further in a proposition that so far has not paid a dividend, and how, without the facts proven by actual figures, is outside capital going to be convinced that it is a good investment?

Out of the earnings that have been turned back into the plant during the years of rapid development, how much has been used for new work, and what percentage has been used for maintenance, operation and renewals? Without these figures as a basis it is, without an appraisal, impossible to arrive at the actual value of the property or any conception of the net earnings.

So long as these conditions exist, so long will Independent telephone securities be questioned. The public may complain of high rates and insist that the telephone company is making an enormous income on its investment, but when solicited to buy stock or bonds people are not so sure. A simple statement that the plant, when fully developed, will bring good returns is not sufficient evidence for the prospective investor. There are too many other opportunities to invest where the actual earning capacity can be or is determined by months and years. The butcher knows to a penny what his earnings are on every pound of meat put over his counter. The merchant can tell you upon counting his receipts about what his profits are for the day, and why should not the telephone company have this information at the close of the month? It has no meat to spoil or bargain counter sales to contend with in order to get rid of an overstock or damaged wares.

It is true the telephone plant has its depreciation, but, unlike the merchant, the price of the service remains the same and since the depreciation and other fixed charges can be estimated very closely, charging off the estimated amount monthly, the earnings per station become almost uniform, so that, barring unusual losses by storm or fire, there should be very little increase or decrease except as would naturally come by an increase or decrease in the number of stations operated.

How About the Small Investor?

Consider the small investor. Is it any wonder that the original investor of a few hundred dollars has been dissatisfied? He sees the little plant of yesterday spreading out for miles in every direction in response to a constant demand for the service. He also sees the original construction rebuilt and the first switchboard replaced by a larger and more modern one, and perhaps an additional section each year, which begins to look like an endless chain, with still no prospects of ever realizing a dividend.

Where the stock-holder is not in touch with the true conditions he is very apt to even doubt getting back his original investment. Ignorance of these facts develops dissatisfaction, and is, almost without an exception, responsible for the refusal of stock-holders to invest further or use their influence in interesting outside capital.

If, on the other hand, they were made acquainted with the actual conditions by receiving monthly, semi-annually, or even annually, a statement showing the actual assets and liabilities, the new construction added during the period and an itemized account of the expense of operating, maintenance, etc.; the amount used for replacement and the net earnings out of which the system was being developed and materially increasing the value of their stock; they would not hesitate to invest more money and the management would have little trouble in placing its securities upon the market.

With but few exceptions, the larger companies have a system whereby this information can be had upon short notice, and they seldom experience any trouble in securing the necessary capital with which to make the needed extensions or improvements.

A Surprising Lack of Accounting.

But, with the company having from 150 to 2,000 subscribers, there is a surprising lack of accounting. As a rule some sort of record is kept, perhaps an old style ledger for recording rents and tolls, and a day book, but the only real balance looked for at the close of the month with any particular interest is that with the bank. The accounts kept, however, require considerable time and labor, but the results are void of the necessary information which is so essential to the successful manager.

It is generally believed that to keep a proper system of telephone accounts necessitates an expert bookkeeper and additional clerical help. This is an erroneous idea. There are few businesses wherein the accounting is more uniform, and this naturally makes the system very simple. After the books have been properly opened and a true record kept of each day's transactions, according to the outline found in the commission's circular, the present office force can handle the work in less time than is required to keep the usual make-shift system and can automatically furnish the desired information for all occasions. If the daily record or day book is a combination cash journal and voucher record, no other books are required, except a subscriber's lease record for rent and tolls, and a general ledger.

A monthly balance sheet or itemized financial statement is not only a pleasure to the manager and other officials interested, whereby they are able to see at all times just what the plant is doing, but is a very necessary document when calling on the board of directors for an appropriation to carry out some needed extensions. A statement simply showing the receipts and amount expended during the same period in bulk does not mean much to a board of directors. The bank book balance will answer just as well, or better. What is necessary is an itemized account of all disbursements, showing the amount expended in time and material in new construction. Without this data the management may be satisfied that the plant is making good returns, but just what percentage it is impossible to estimate and it does not constitute a very substantial proposition to put up to a prospective investor, or upon which to negotiate a loan.

In many instances under a limited franchise the rates are too low, according to the number of stations operated to afford a fair return to the stock-holders. In such a case a statement giving the above information will be sufficient proof to warrant any common council or state commission in granting relief sufficient to pay at least a nominal dividend on the actual investment. On account of the company not being able to furnish the necessary detailed information, many requests of this nature have been denied. Therefore, no company or individual operating a telephone plant, no matter how small, can afford to continue without a system of accounting, whether a commission demands it at this time or not.

The Interstate Commerce Commission should have the hearty co-operation of all. It has given the telephone companies ample time to make the necessary provisions for looking after their business in a business-like and uniform manner and now it is found necessary to outline a system broad enough to embrace both the largest and smallest company. It is your interest the commission is looking after and it should have your co-operation rather than complaints.

Proper Functions of Clearing House and Their Value

Manager of Illinois Independent Toll Clearing Company Urges Merits of Association of Operating Companies and that Co-operation Will Result in Economies and Increased Revenue—Paper Read at Convention of State Association, at Peoria

By H. B. Gilmore

The Bell Telephone Co. earns $9 per year per station on its toll business. How much do you earn?

The Independent telephone men have been looking after the local work so strong that they have forgotten the cream of the business, that is the long distance business. You have called your companies Home companies and advertised to that effect, forgetting the fact that you have hundreds of dollars invested in circuits running out in each direction tha' are absolutely valueless unless you can get your patrons to use them.

The Bell company spends a million dollars a year in advertising its long distance service. Don't you realize that the Independent companies have half a million more telephones than the Bell company? Wake your subscribers up by telling them that you have long distance connections and that you want their business.

Doubled Toll Business in a Year.

In Detroit some months ago they hired a man who guaranteed to double the toll business in a year. He did it in 11 months. How did he do it? First, he picked the best operator, a girl who had a pleasant voice, one who had a wide range of experience, and one who was quick, bright, and thoroughly up to date. He put her back of the switchboard and gave her a card case showing each toll user of that company. In October, we will say, a certain subscriber used $3 worth of toll service. In November they noticed his toll business was only $2. The girl checked up and found his toll business had fallen off $1 for that month. She then called him and asked how his toll business was and how service was. She said they had noticed his business had fallen off for the month and asked him what the trouble was. The girl, to do this work, must have tact and the right method. But she was able to get to the subscriber and call the matter to his mind. He would naturally say: "Those people are wide awake; they want my business." Consequently the business in that town was doubled in 11 months.

Now, in order to get this business and hold it, it is necessary to have co-operation and harmony.

It is possible to have harmony without co-operation but we must have both. This can best be brought about through operators' schools where the operators may become acquainted with each other and where they may thresh out little operating problems that would never be settled unless they were brought face to face with each other.

Have a standard set of operating rules that all companies, large and small, may adopt and enforce them. It will mean dollars saved in time in the use of your circuits.

The Department of Commerce and Labor some time ago gave us figures on which we can estimate the business of the Independent companies for 1912 at about $29,000,000 of which $4,500,000, was not completed and for which we did not receive pay. Why did we have this loss? Lack of harmony and co-operation, lack of operating rules, lack of a systematic way of handling the business that has grown too fast for us.

How can these things be remedied? First, by joining the Clearing House and giving it your co-operation and support, using your influence with your neighbors in an effort to get them to join with us.

Co-operation may be effected through a clearing house quicker and better than by any other method, for the associate companies are cemented together in a financial way that makes it necessary and beneficial for them to all work together.

A clearing house to be successful must be absolutely independent and must treat all companies exactly alike. If a policy of this kind is carried out it cannot help but have the

confidence of the associate members and can not help but be a success.

The man who does not want to join the clearing house has a private axe to grind. Don't you want your neighbor to succeed? How can he build new toll lines and keep the old ones in condition if you won't allow him a fair price for the use of his lines?

The Illinois Clearing House is for that purpose alone—to play absolutely fair and square with everybody, treating all alike. The old method of keeping all you take in and letting the other fellow do the same is absolutely unfair and you can't expect to expand and increase your toll business as long as you use that method of settlement, for there is then no incentive for expansion.

I know of one large company in Illinois that is losing hundreds of dollars' worth of business each month because a few small companies at one terminal insist on settling by the old method. As a consequence all the long haul business goes over the Bell lines.

What the Clearing House Should Do.

The clearing house should make all rates and they should be rigidly held to. The clearing house should make all operating rules and should have charge of all operating schools so that the entire state may operate uniformly.

The clearing house should be the arbitrator in case of disputes between companies, as it is in a position to know how certain decisions would affect conditions other than local ones. These things cannot be done unless the clearing house has your individual support and your absolute confidence.

On account of the time being almost all taken up in the effort to secure new members and in perfecting the clearing system, the management of the Independent Toll Clearing Co., of Illinois, has had very little time to go into these matters, but at present we are arranging to go after losses in operating and losses in timing messages, and we are arranging to conduct schools wherever they are wanted, to secure new toll lines where they are necessary, and to further promote good feeling among the associate members.

We have tried hard to gain the confidence of the associate members and we hope we have succeeded. We have tried hard to remain friendly with every company doing business with us and, at the same time, have enforced the by-laws of the organization, and we want every member of the company to know that we have remained absolutely loyal to our policy, that of treating all companies alike. We want any member at any time to criticize our work or make suggestions that might be a benefit to our system.

The organizers of the clearing house have paid a high rate of clearance on their business in order that the clearing house might get on its feet and be a success. Now that it is on its feet and is in good condition, you managers who have not yet joined owe a debt to those men who have made this thing a success and you can pay that debt by joining with us and settling your business through us on a mileage basis. Can you afford to stay out?

Novel Proposition in Chicago.

The Illinois Telephone & Telegraph Co., which operates the Independent system in Chicago, has adopted an unusually liberal policy with its subscribers who use pay stations. A circular to such subscriber says:

"We beg to advise you that commencing January 1, 1913, this company will allow 50 per cent. of all money deposited in the coin box over and above the guarantee as called for by your contract, namely, $1.50. We want all our subscribers to feel that this company is desirous at all times of giving its patrons the best service at the lowest rate."

One Reason for Poor Service.

The Hardware Reporter, of St. Louis, recently published a drawing representing one way in which the Tired Business Man is harassed in his efforts to use the telephone for legitimate purposes. This was so well shown that it is here reproduced. It speaks for itself.

WHY THE CUSTOMER, WHO WANTS TO ORDER GOODS, CAN'T GET THE LINE

Pennsylvania Bell Abandons Exchange.

The exchange of the Bell Telephone Co. of Pennsylvania, in Stoyestown, Pa., is to be abandoned, according to present plans of the company. Connections that have heretofore been made through the Stoyestown office will be handled from a new exchange to be installed at Boswell.

Practical Subjects—Letters and Discussions

Pole for Telephone and Electric Light Wires.

The enclosed photograph of a joint telephone and electric light pole may be of interest to TELEPHONY's readers as it represents some of the latest features in this class of construction. The electric light wires are located above the telephone wires. They comprise a series arc circuit carried on an extension fixture so as to clear trees and a three-wire 220-volt alternating current distributing system. Transformers are located at inconspicuous points to feed this circuit, from which drops are taken directly into the houses. The 2,200-volt circuits are at present located on separated poles but may be run on cross arms immediately above the low tension circuit.

Joint Pole Construction in Pennsylvania.

Immediately below the power lines are the subscribers' drops of the telephone company. These are of No. 16 copper-steel twisted pair wire and are run on porcelain knobs supported on the pole by galvanized brackets. At the pole the pairs are dead ended and brought into a terminal of the sealed chamber type without brotection. The telephone attachments are placed on the opposite side of the pole to those of the electric light company.

This lead runs on a high-class residential street of Sewickley, Pa., and due to careful workmanship by both companies, offers the minimum offense to property owners along that side of the street. This point is of great importance to both companies, as the good will of the public is highly important in securing their business.

Pittsburgh, Pa. PAUL B. FINDLEY.

A Case of Intermittent Trouble.

One of the most puzzling cases of a line going short which I have ever had to deal with occurred recently. The exchange which served the city was a common battery system. One position of the switchboard was equipped for magneto service to take care of the farmers' lines. Some of these lines extended nearly 10 miles into the country and not more than eight parties were on a line.

One fall day we received a report that a subscriber on line 306 was unable to reach the exchange. Ordering it upon the test cord, we got a dead short reading. On consulting our card record, it was found that the subscribers were scattered along from four to nine miles out from the office.

We anticipated a difficult case ahead of us for we could not hear any noise along the line. Not wanting to increase the manager's worries by having to hire a rig twice, if the trouble were not found that day, we let it go over for the first case in the morning. To our pleasure that evening it was found that the trouble had cleared up. But our joy was not to last long, for about dinner time the next day the trouble was reported again and in an hour or so cleared up again.

That is the way it acted for several days. Sometimes the line would be clear for a day or so, then it would go short in the morning or afternoon, often both morning and afternoon. One strange feature was that it never was in trouble in the night. Once we caught it long enough to test it outside of the cable; a second time we chased it past half of the subscribers.

After an interval in which we received complaints and threats of what the subscribers intended to do if we did not fix the trouble, and after a couple of inspections by different inspectors, the trouble was finally found at the residence of one of the most frequent kickers.

Here we always found a nice old grandmother who welcomed us while she merrily clicked her knitting needles, knitting a present for some loved one. The inspector never thought of associating her knitting needles with his trouble until he traced the trouble to that particular house.

On entering he missed the smiling face, but saw some knitting work laying on the top of the telephone and two of the needles resting on the binding posts were the cause of the short on the line.

The bell box was handy to lay the knitting on during the day, while at night it was placed in a chest. This explained why the trouble never occurred during the night.

Nottingham, Ohio. Jay W. Hache.

An Aunt's Letters to a Switchboard Girl.

HEALTH AND A DAY.

My Dear June:

Since beginning your course in reading, you may have run across these lines of Emerson's:

"Give me health and a day, and I will make the pomp of emperors ridiculous. The dawn is my Assyria; the sunset and moonrise unimaginable realms of fairie; broad noon shall be my England of the senses and the understanding; the night shall be the Germany of mystic philosophy and dreams."

But, the day would mean none of these wonderful things without the first consideration. How much 365 healthful days would hold for us on such a scale! Yet you have seen many a one, both old and young, do such heedless things against their bodily health.

Just last night we had Winter in one of his roughest moods. This morning the air is sharp and clear; you would think your cousin, who so recently went through the siege of sickness, would be doubly careful of her health.

Do you know it took not only a reminder but strong argument to have her put on her overshoes and a warm cap? Do you ever rebel at covering the dainty shoe with an unsightly rubber?

You confess that you are proud of a shapely foot? Since Eve's legacy cannot be taken from you, use your acquired degree of common sense along with it.

In the small office there cannot be every convenience that one would wish for you girls, so you must take all thought for yourselves. Some of you get plenty of fresh air because of your long walk to work, but the gain in this walk may be offset, by some fear of being late.

Unless you are an early riser you may at times snatch—that is not an elegant word, but expressive—a hurried breakfast or go without any. I do not believe the company nor the subscribers gain anything in quality of service from a hungry Central. So irregular meals may be detrimental to health through unstrung nerves—that mystery and tragedy of womanhood!

As the spring comes nearer, there will be days so summer-

like, that coats will be left at home; the umbrella nuisance will be contemptuously ignored and unless some gallant, unselfish boy happens along about seven o'clock you will scurry home in a drizzle of rain or mayhaps snow.

It is laughable at the moment, but next day nobody will show any great amount of sympathy for you, at the too evident signs of sore throat. The croak of hoarseness will not be soothing to the subscribers who find it nearly impossible to understand you.

Oh, yes, I have heard hundreds of times from young people, that they are the ones who have to bear the results of such carelessness. But there are surely about 300 who have to help you bear the results, to say nothing of the loss of efficiency to your employer, who does not get the worth of his money from a half-sick employe.

Greater than all to you girls, health is the basis of beauty! And right there is the puzzle to me, why should any one need to advise, or scold as I am doing in this letter? If your health is not perfect, that acid, fear, may rust your tools and undue anxiety, cause friction; anger results, and lamentation, the lonely musician, like a screech owl, haunt you and disgust your associates.

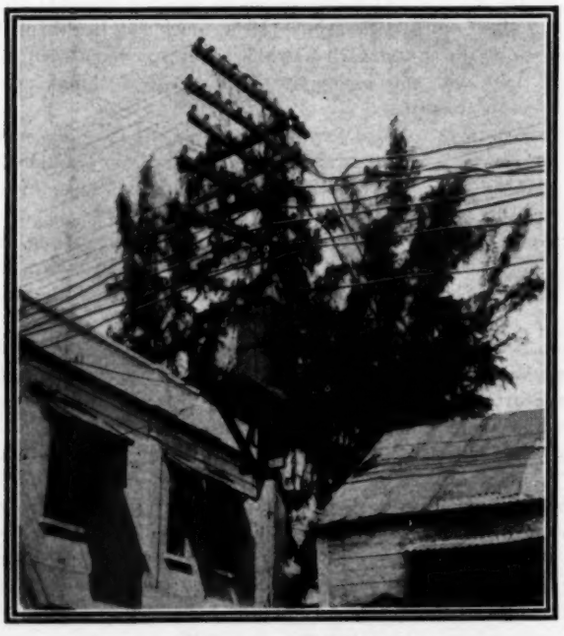
Naturally, June, you know that we cannot get over life without going through it, so let's study to make the trip with as smooth sailing as possible, and since "It's hardly in a body's power to keep at times fra being sour," we may be content of heart.

Ill habits of mind may have the force of ill fate. There is, I have been told, a state of such blissful tranquility that no waves, great or small ever reach its height. Also we have read that heroes, and heroines, too, I judge, were illustrious because of their benignity and lack of bluster.

Pray, take this set of rules to heart, June, and prove yourself superior even to the one who gives it you. Do you not see particularly how your health may be one phase of loyalty to your employer? With much love, YOUR AUNT.

Telephone Construction in Jamaica.

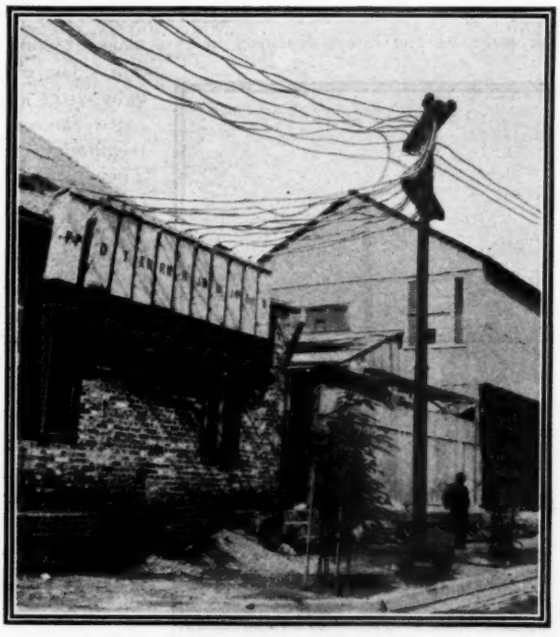
On a recent trip through the West India Islands John S. Haines, wire chief of the Rochester Telephone Co.,



Some Typical Telephone Construction.

Rochester, Minn., saw some interesting bits of telephone construction work. His camera was the means of supplying TELEPHONY's readers with two interesting descriptions which speak for themselves. Regarding them Mr. Haines says:

"One shows the terminal pole and exchange building and the other gives an idea of the typical construction about



Office Building and Pole.

the city. Both views were taken in Kingston, Jamaica. This construction, however bad for the United States, is not a circumstance to the average construction through the West Indies, pictures of which I was unable to get on account of light conditions."

Shooting Trouble on a Phantom.

I am writing this in the endeavor to help some fellow lineman out. We have a full metallic phantom line coming off of two full metallic physicals four miles out of town. We had used a paste soldering solution to solder the connections to the coils and, to all outward appearances, the connections were good.

Our chief operator reported that she could not hear the subscribers very plainly and furthermore that they could not talk across to the other lines in the system. At times the line was scratchy and choppy.

Upon testing out with our test cabinet, I found the line to be free from grounds and also any disturbances. After testing and examining the switchboard terminals and jack and finding them all right, I concluded the trouble must be outside the exchange.

I went out on the line but could not locate the trouble for a time. At this time the wind was not blowing and I could not get the scratchy and choppy noise, but still the line did not talk clear as it should. Finally the wind rose and I was able to hear the noise again. By testing several times I was able to trace it to one of the coils on the poles, from which the phantom proper starts.

After examining the connections on the physical lines, which were well soldered, I looked at the connections on the coils and there found the trouble. The solder paste had adhered to the wire and not to the terminal of the coil but from outward appearances the joint was good. The vibration of the jumper wire caused by the wind had produced the scratchy and choppy noise and the poor joint the weak line. We can not be too particular with our soldered joints, the best of which are none too good.

Hutchinson, Minn. Albert Evans,

The Telephone Inspector and the Troubleman

Continuation of a Series of Articles Begun in the September 7 Issue of Telephony—They Deal in an Elementary and Explicit Manner With Many of the Problems Encountered by Telephone Men in the Operation of Small Exchanges

By A. E. Dobbs

"In this photograph," continued George, taking up the photograph (Fig. 56), which he had laid on the table while talking, "is shown some of the cable being drawn into the underground conduit. The men have to be very careful in doing this so as not to injure the sheath in such a manner that it will break, thus permitting moisture to enter. The cables are brought into the exchange underground."

Fig. 56. Drawing In Underground Cable.

"Did they put the toll lines in cable," asked Will, who had heard that it was a good thing to keep them out of cable as far as possible.

"The toll lines are brought into the exchange from the nearest underground pole through a special toll cable," replied George. "The rural lines are aerial to within about 75 feet of the exchange and then they enter cables. The grounded farm lines are not changed to metallic in passing through the cable. They are run to the toll board, at which the rural line traffic is handled, passing through a distributing frame which is separate from the frame used for the local or city lines.

"In the old aerial plant, two lines of poles were frequently placed in the same alley and the cable and wires were jumped from one pole to another. As a result the electric light and telephone wires were in many places in close proximity to one another. In making the plans for reconstruction the telephone poles were placed on one side of the alleys, opposite to the electric light wires, and the toll and rural lines were strung on arms above the cable, thus getting them well above the power and lighting wires. This picture (Fig. 57) shows an alley after the reconstruction."

"What did they do in regard to grounding the cable sheath to take care of lightning discharges?" queried Will, looking at the aerial cable leads in the photograph.

"The aerial cable and messenger wire are bonded and grounded at average distances of 800 feet over the entire system," answered George. "Every cable terminal can is grounded with three strands of No. 10 copper wire soldered to a 5-8 in. x 8 ft. galvanized ground rod driven at the base of the pole.

"This blueprint map (Fig. 58) of the streets of the place where 'Dick' is located, shows the layout of the cable distribution. The underground cable is indicated by the solid lines and the aerial by the broken lines. Each main cable leaving the exchange is of 400 pairs capacity and the branch cables are of 350 pairs down to 25 pairs. Each branch lead of aerial cable is built to the end of the alleys and the dead ending poles are guyed to log anchors. If you study the blue print, you can see how the cable is branched out and the method of locating the distributing cans."

"What size terminal cans and cable did they use?" asked Will.

"The distributing terminals are of 10, 15, and 25 pair capacity," replied George. "No. 20 B. & S. gage cable, with an electrostatic capacity per mile of .12 microfarad, was used for underground lines and No. 22 B. & S. gage for aerial. In the determination of the size of cable and the location of cable terminals, the factor employed was the number of telephones in use plus an average of 20 per cent. allowed for increase."

"I suppose," remarked Will, "that some sort of a development study was made of the town. That's something I should like to know more about. I have heard of such studies being made but don't know how they go about it. Have you any data on development studies?"

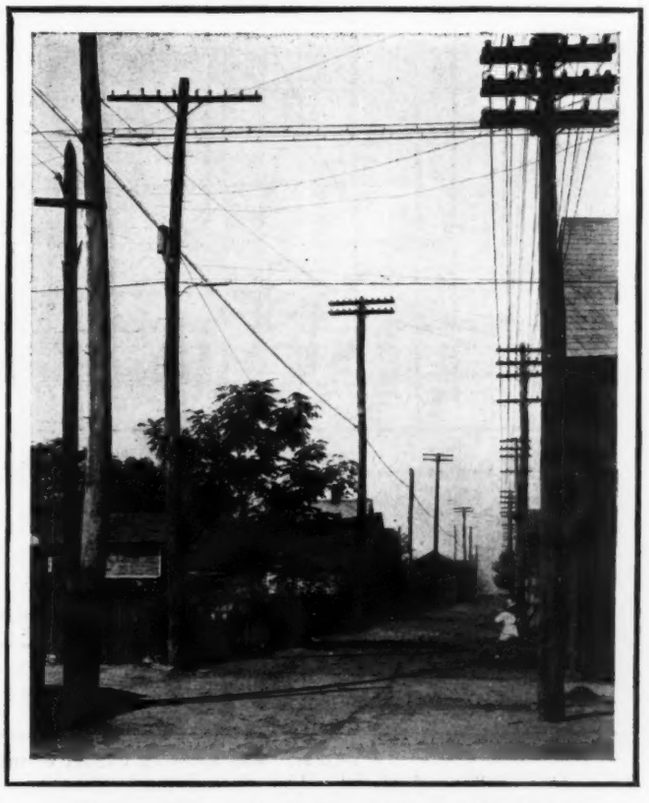


Fig. 57. Toll and Rural Lines, the Only Open Wires.

"Let me see," pondered George. "Yes, I believe I have an article along those lines, which I found in a telephone paper that fell into my hands some time ago. I'll look it up tonight."

TRASH TO BE THROWN AWAY.

"I see you have repaired a number of sets in the past few days," continued George, glancing around the room. "There is a carbon ball transmitter that is good for only one cell of battery. We will take that out and put in a solid-back type of talker. As the set has a small battery box, we will use two cells of dry battery with it. They are over there in that closet. This has a short 250-ohm coil, which would work well with a Blake style of instrument, but not so well here. Our standard coil here is 3 7-8 inches long, and wound to 1½ ohms with No. 22 wire in the primary, and 150 ohms of No. 34 wire in the secondary. These coils are not the only ones, but we have found that size very satisfactory. We want them all alike, so you will change all the coils that don't conform with that size. Better put new coils in all those instruments anyhow, then I can take those old coils over to the station and test them."

"How do you do that?" asked Will.

"That is a trick that boys can't learn until they've served their time," replied George oracularly. "We ought to have a bridge and a galvanometer here, but I have not been able it does not lift it, put that receiver away. Yes, I know. The test for new receivers is sometimes made with heavier weights, but we will not be so exacting on these second hand instruments."

"In every place where you find a switch hook with weak, corroded and dirty springs, take it out and put in one of

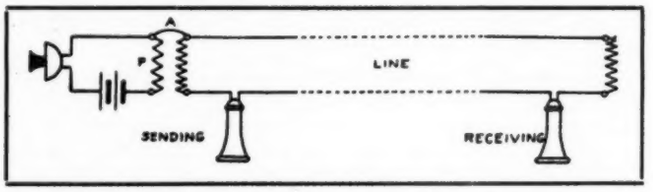


Fig. 59. No Circuit Between Primary and Secondary Winding.

these hooks with strong springs and a firm rubbing contact. In the new instruments we are now buying, we get platinum contacts."

"One thing I would like to know," broke in Will, "is why the primary and secondary windings are tied together at one end. I should think the connection would destroy the effect of the induction."

"The connection is made," answered George, "to simplify the wiring of the set. It also saves some contacts on the

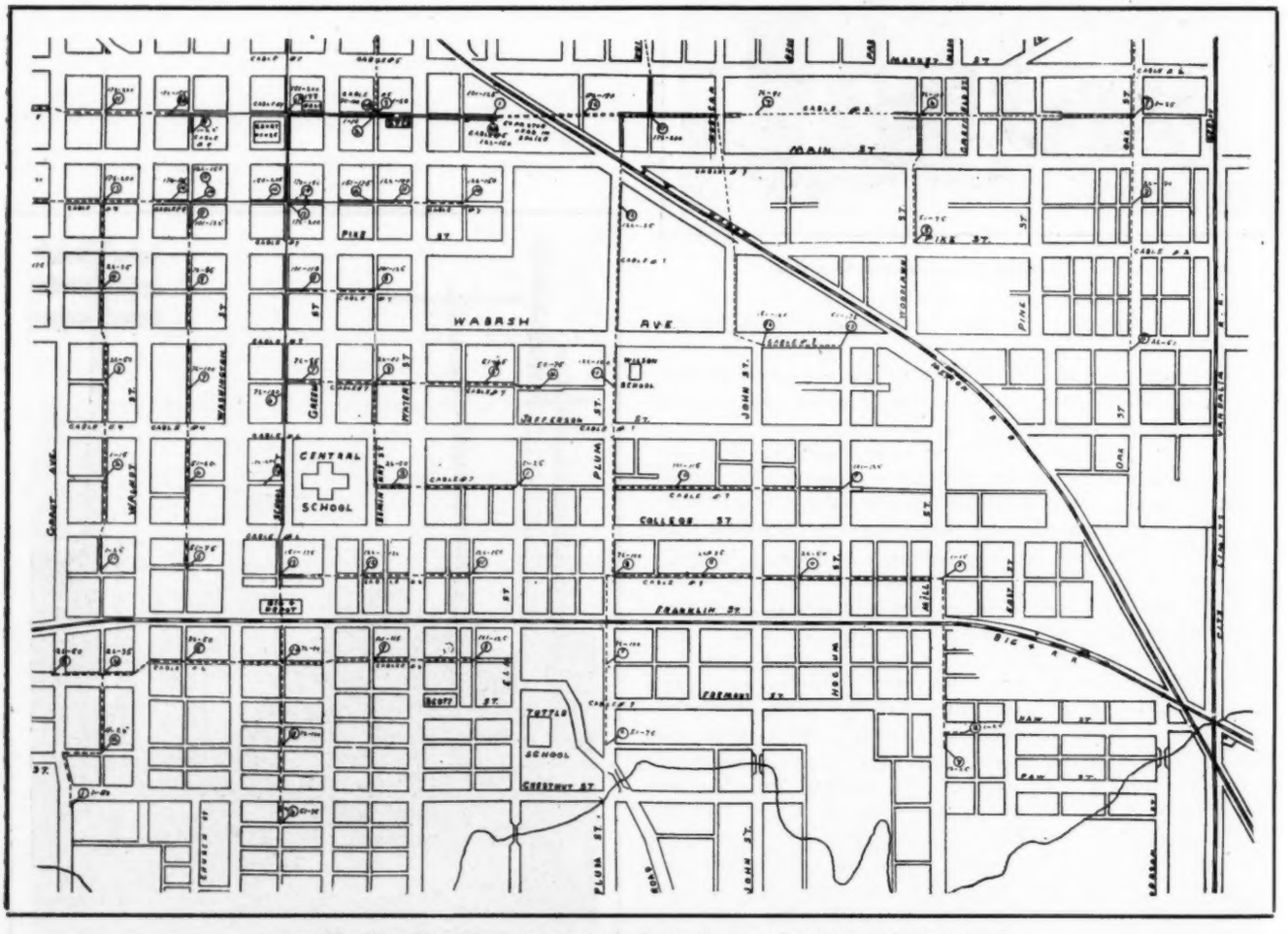


Fig. 58. Map Showing Layout of the Cable System, Aerial and Underground.

to make Mr. Risk see it in that light. But let us continue. Some of these old receivers are of no earthly good, so we will throw them away. Keep the shells and the spools, they may come in handy.

"Here," went on George, "is a piece of iron that weighs 10 ounces. Test every receiver magnet with that, and if switch hook. The inductive action is not destroyed by the tie because there is no return path for the flow of current. I believe I explained the step up action of the coil to you some time ago, but to make sure you will understand this tie between the primary and secondary coils. I will go over it again.

"When the transmitter is quiet, the primary current flows steadily around the core of the induction coil, magnetizing the iron to a certain degree. When agitated by the voice, the transmitter causes the primary current to rise and fall. This variation in current strength causes the magnetism of the core to vary proportionately. Since the secondary winding is also in the field of this magnetism, the variations produce an alternating current voltage in the secondary. This alternating current electromotive force drives the current over the line to the other telephone. The increase in voltage is approximately proportional to the ratio of numbers of turns in primary and secondary windings."

"In this diagram," George went on, getting out his pencil and rapidly sketching a circuit (Fig. 59), "the tie is represented at *A*. You can see that no current from either primary or secondary circuits can flow from one into the other, for there is no return path. As tie *A* cannot affect the magnetic field, the induction is not influenced."

"That clears my mind on a question I had often wondered about and wanted explained," said Will, as George prepared to leave for a general tour of observation."

(*To be continued.*)

Uniform Accounting System of Interstate Commission

Complete Details of Plan Promulgated by Government Body for Use of Every Telephone Company Having Annual Income of Upwards of $50,000—Plan for Smaller Concerns is Now Under Contemplation—System Effective Universally January 1, 1913

415. APPROPRIATIONS OF SURPLUS FOR CONSTRUCTION, EQUIPMENT, AND BETTERMENTS.

This account should include amounts appropriated from surplus for construction and equipment and for betterments of property carried in the fixed capital accounts.

These amounts should be subdivided so as to show (*a*) amounts expended during preceding fiscal periods, (*b*) amounts expended during the current fiscal period, and (*c*) amounts held in reserve.

NOTE.—This account should be used if appropriations are definitely made as chargeable to surplus. If similar appropriations are made from income, they should be charged to account No. 352, "Appropriations of Income for Construction, Equipment, and Betterments."

416. MISCELLANEOUS APPROPRIATIONS OF SURPLUS.

This account should include appropriations of surplus not provided for elsewhere.

NOTE.—This account should be used when the appropriations are definitely made as chargeable to surplus. If similar appropriations are made from income, they should be charged to account No. 353, "Miscellaneous Appropriations of Income."

417. OTHER DEDUCTIONS FROM SURPLUS.

This account should include amounts (not provided for elsewhere) transferred from Surplus to other accounts, amounts written off in consequence of adjustments, and payments not properly chargeable to Income for the fiscal period for which the accounts are stated. Among the items which should be charged to this account are, for example:

Adjustment or cancellation of old balance-sheet accounts (other than fixed capital).

Losses resulting from the sale, destruction, or retirement of property carried in account No. 111, "Miscellaneous Investments."

Losses resulting from adjustments required to bring to par securities issued or assumed by the accounting company and reacquired at a cost exceeding the par value.

Deductions made to extinguish discount on capital stock.

Deductions made to amortize debt discount and expense when not properly chargeable to income.

NOTE.—A complete analysis of this account will be required in annual reports of the company to the Commission.

INSTRUCTIONS PERTAINING TO OPERATING REVENUE ACCOUNTS.

18. **Operating revenues defined.**—By *operating revenues* are meant all amounts of money which the company receives or becomes lawfully entitled to recover for services rendered and as a return upon property used by the company in its own operations. Credits to the various revenue accounts should be based upon the gross charges made for services rendered by the company.

19. **Deductions from revenues.**—Discounts allowed subscribers for prompt payment, corrections of overcharges, overcollections theretofore credited and afterwards corrected, authorized refunds on account of failures in transmission, and other corrections should be charged to the revenue account to which they relate.

20. **Commissions.**—Commissions paid to attendants at pay stations and to employes or others in lieu of salaries should be charged to appropriate expense accounts and not to the revenue accounts.

TEXT EXPLANATORY OF OPERATING REVENUE ACCOUNTS.

I. Exchange Service Revenues.

500. SUBSCRIBERS STATION REVENUES.

This account should include all revenues from subscribers for exchange service, extension stations, private branch exchanges, and other exchange service stations, whether the charge is based upon a flat rate or measured rate. Include in this account, also, charges made for the insertion of extra names in directory and for use of extra exchange mileage in circuits to subscribers' stations, installation and cancellation charges, and any commissions on telegraph tolls received in lieu of rent for exchange lines.

501. PUBLIC PAY STATION REVENUES.

This account should include all revenues from exchange service at public pay stations. This account should not include revenues from regular subscribers' stations having measured service or coin box service at standard rates. The amount credited to this account should be the gross amount collected or due at tariff rates; commissions allowed attendants or others for pay station tolls should be debited to account No. 648, "Pay Station Commissions," and not to this account.

502. MISCELLANEOUS EXCHANGE SERVICE REVENUES.

This account should include all revenues derived from exchange service other than from subscribers' stations or public pay stations, as provided for in the following subaccounts:

503. *Service Stations.*

This account should include switching charges and other revenues derived from stations, the lines and equipments

for which are owned wholly or in part by others, but to which the accounting company furnishes exchange service.

504. *Private Exchange Lines.*

This account should include all revenues derived from telephone lines, equipment, and instruments forming part of the company's exchange plant and leased to others for use as private lines but without exchange connections with other subscribers.

505. *Minor Rents of Exchange Plant.*

This account should include all revenues derived from attachments to exchange poles, the use of exchange conduits, and other minor rents from exchange plant where such property is maintained by the accounting company, and the cost of such maintenance can not be separated from the expense of maintaining the rented property. This account should not include rents for equipment leased to licensees under an arrangement for a division of revenues as provided for in account No. 526, "Licensee Revenue—Cr."

506. *Other Exchange Revenues.*

This account should include all exchange service revenues not provided for elsewhere.

II. Toll Service Revenues.

510. Message Tolls.

This account should include all revenues derived from messages transmitted wholly over the company's lines between stations in different exchange areas and for which a charge is made that is not included in contracts with subscribers for station service; also the accounting company's proportion of tolls on messages transmitted by the joint use of its own and other lines.

511. Miscellaneous Toll Line Revenues.

This account should include all toll service revenues (other than message tolls), as provided for in the following subaccounts:

512. *Leased Toll Lines.*

This account should include all revenues derived from toll lines (including the terminal exchange circuits) leased by others under contracts giving exclusive telephone use either continuously or during stated periods. Such plant may be leased in connection with private branch exchange or private exchange line installations.

Note.—Revenues from private branch exchanges or private lines, the contracts for which provide for the use of toll circuits, should be divided (by estimate, if necessary) between Exchange Revenue and Toll Revenue.

513. *Telegraph Tolls.*

This account should include all revenues received from telegraph companies for the use of toll lines for telephoning telegrams and cablegrams.

514. *Telegraph Service on Toll Lines.*

This account should include all revenues derived from the use of toll lines for telegraph circuits whether such lines are used by telegraph companies, brokers, or others.

515. *Minor Rents of Toll Plant.*

This account should include all revenues derived from attachments to toll poles, the use of toll conduits, and other minor rents from toll plant where such property is maintained by the accounting company, and the cost of such maintenance can not be separated from expense of maintaining the rented property. This account should not include rents from equipment leased to licensees under an arrangement for a division of revenues as provided for in account No. 526, "Licensee Revenue—Cr."

516. *Other Toll Line Revenues.*

This account should include all toll line revenues not provided for elsewhere.

III. Miscellaneous Operating Revenues.

520. Messenger Service.

This account should include all revenues derived from messenger service.

521. Telegraph Commissions.

This account should include all commissions receivable for the collection of telegraph and cable tolls on messages transmitted between telegraph offices and their patrons and upon which the accounting company undertakes to make collection.

522. Other Telegraph Service Charges.

This account should include all revenues (not classed as telegraph commissions or telegraph tolls) received from telegraph companies for services rendered by the telephone company's employes in joint telephone offices in connection with telegraph and cable messages, such, for example, as receiving messages from the public and quoting rates.

523. Advertising and Directory.

This account should include all revenues derived from advertising in directories and elsewhere.

524. Rents from Other Operating Property.

This account should include all revenues accruing from the rent of buildings and other property (except leased wires, poles, conduits, and equipment covered by accounts No. 505, "Minor Rents of Exchange Plant," and No. 515, "Minor Rents of Toll Plant,"), when such property is used also by the company and the expense of maintaining and operating the rented portion can not be separated from the total expense.

525. Other Miscellaneous Revenue.

This account should include all miscellaneous operating revenues not provided for elsewhere. This account does not include nonoperating revenue as provided for in accounts Nos. 310 to 316, inclusive.

526. Licensee Revenue—Cr.

When a telephone company grants to another telephone company the use of its patents or furnishes instruments and equipment and general supervision under an agreement for apportioning the revenues of the licensee, the proportion accruing to the licensor should be included by the licensor in this account.

527. Licensee Revenue—Dr.

When a telephone company is granted by another telephone company the use of its patents, or is furnished instruments and equipment and general supervision under an agreement for apportioning the revenues of the licensee, the proportion accruing to the licensor should be included by the licensee in this account.

INSTRUCTIONS PERTAINING TO OPERATING EXPENSE ACCOUNTS.

21. **Repairs defined.**—Repairs, as used in the text of the various operating expense accounts, includes ordinary and extraordinary repairs.

Ordinary repairs include:

(*a*) Testing for, locating, and clearing crosses, breaks, grounds, and other line troubles, including work intended to prevent such troubles, as, for example, pulling up slack, tightening guys and resetting guy stubs, trimming trees, straightening poles and cross arms, and cleaning and adjusting apparatus.

(*b*) Replacements of minor or short-lived parts of structures, equipment, or facilities;

(*c*) Replacements of minor parts of wire plant or equipment made necessary by reason of faulty adjustments, excessive strains, mechanical injuries, or other minor casualties, not provided against in the charge for depreciation of plant and equipment;

(*d*) Rearrangements and changes in location of plant, except subscribers' station equipment (for which a special ac-

count is provided). This includes rearrangements of circuits, reassociation of party lines, rearranging grouping of trunks and calling circuits, recross connecting on distributing frames, rerunning jumper wires, underlining switchboard jacks, etc., together with materials used for such purposes which do not add to the tangible value of such plant;

(*e*) Recovering salvage and removing retired or abandoned property; (except subscribers' station equipment) when such costs are not provided for by the depreciation reserve.

Ordinary repairs are not required to be taken into account in fixing a rate of depreciation.

Extraordinary repairs include:

(*a*) Restoring to an efficient or proper condition buildings, structures, or other units of property which have deteriorated;

(*b*) Substituting, in order to maintain normal efficiency, new parts for old parts of continuous structures, such as pole lines, cables, wires, conduits, etc., where such substitutions do not amount to a practical replacement of any considerable length of such continuous structures;

(*c*) Restoring the condition of property damaged by storms, floods, fire, or other casualties.

(*d*) Recovering salvage and removing retired or abandoned property in connection with above work.

Extraordinary repairs should be provided for by adequate changes to depreciation.

When it is necessary substantially to reconstruct or to replace a major portion of any unit or property or any important section of a continuous structure, the cost should be handled through the capital accounts; that is the cost of the property removed or replaced should be credited to the appropriate fixed capital accounts and the new property should be charged thereto.

All repairs, whether ordinary or extraordinary, should be charged to the appropriate primary operating expense accounts. Extraordinary repairs for which a reserve has been provided should then be concurrently charged to account No. 102, "Reserve for Accrued Depreciation—Cr.," and credited to account No. 611, "Repairs Charged to Reserves—Cr."

22. **Cost of repairs.**—The cost of repairs, as used in the text of the various operating expense accounts, should be understood to include the wages, salaries, and fees paid employes directly engaged in the work of repairs, personal expenses of such employes when borne by the company, and the cost of materials and supplies consumed and the expenses of facilities employed in making the repairs less the value of any salvage recovered. It includes also the cost of direct supervision, such as of foremen or superintendents of repair gangs, but does not include the cost of general supervision as provided for in account No. 601, "Supervision of Maintenance."

23. **Depreciation of plant and equipment.**—Telephone companies should include in operating expenses depreciation charges for the purpose of creating proper and adequate reserves to cover the expenses of depreciation currently accruing in the tangible fixed capital. By *expense of depreciation* is meant—

(*a*) The losses suffered through the current lessening in value of tangible property from wear and tear (not covered by current repairs).

(*b*) Obsolescence or inadequacy resulting from age, physical change, or supersession by reason of new inventions, and discoveries, changes in popular demand, or public requirements, and

(*c*) Losses suffered through destruction of property by extraordinary casualties.

The amount charged as expense of depreciation should be based upon rules determined by the accounting company. Such rules may be derived from a consideration of the company's history and experience. Companies should be prepared to furnish the commission, upon demand, the rules and a sworn statement of the facts, expert opinions, and estimates upon which they are based.

The estimate for depreciation of physical property should take into account—

(*a*) The gradual deterioration and ultimate retirement of units of property which may be satisfactorily individualized, such as buildings, machines, valuable instruments, etc., to the end that by the time such units of property go out of service there shall have been accumulated a reserve equal to the original money cost of such property plus expenses incident to retirement less the value of any salvage.

(*b*) The depreciation accruing in property which can not be readily individualized, such as pole lines, wires, cables, or other continuous structures, where expenditures for repairs or replacements of individual parts ordinarily are not actually made until the later years of the life in service of such property, and when made may, therefore, be classed as extraordinary repairs.

The rate of depreciation should be fixed so as to distribute, as nearly as may be, evenly throughout the life of the depreciating property the burden of repairs and the cost of capital consumed in operations during a given month or year, and should be based upon the average life of the units comprised in the respective classes of property.

The amount estimated to cover the expense of depreciation of fixed capital should be charged monthly to account No. 608, "Depreciation of Plant and Equipment" (or to the appropriate clearing account or accounts), and concurrently credited to account No. 102, "Reserve for Accrued Depreciation—Cr."

Account No. 413, "Realized Depreciation not Covered by Reserves," is provided in the Corporate Surplus or Deficit account for charges for realized depreciation on tangible fixed capital retired when such depreciation occurred prior to the establishment of account No. 102, "Reserve for Accrued Depreciation—Cr.," or has not been provided for by credits to that account.

24. **Extraordinary casualties and unanticipated reconstruction.**—If so authorized, upon application to the commission, the company granted such authority may charge the amount named in the authorization to a suspense account for the purpose of distributing over a limited period an extraordinary loss of such a nature that it can not be anticipated by the exercise of reasonable prudence. Losses of this sort may be due to the requirement by lawful authority or public necessity of improvements involving the abandonment of a considerable portion of plant and equipment before it has attained its normal life in service, or to an extraordinary casualty entirely unforeseen and unprovided for. The original cost of the property so abandoned or destroyed should be credited to the fixed capital accounts in which it was carried, and such portion of the cost as may be authorized by the commission may be charged to the suspense account, the remainder of the cost, less salvage being charged out as elsewhere provided in case of retirements of property. The suspense account so raised should be credited and account No. 609, "Extraordinary Depreciation," debited monthly with such an amount as will, through its regular application, amortize the amount of the loss at the end of the period designated.

All ordinary casualties (those which occur with such frequency that the principles of insurance are applicable thereto) should be provided for through an insurance reserve maintained for such losses or be included in the provision for depreciation of plant and equipment.

(*To be continued.*)

From Factory and Salesroom

Automatic Inspires Poetry.

In a recent article in the Buffalo (N. Y.) News, dealing with the automatic telephone system, appeared the following poem:

To the High Priestess.

Ah, Priestess of the Telephone,
Clarissa, Mary, Bess or Lizzie,
Purveying news in dulcet tone
"Receiver's down!" or "Line is busy!"
Sweet sisterhood of Raven Locks,
Of auburn wisps and carrot tresses,
Decided blondes (and some perox-
Ide blondes as well, a layman guesses!)
What would you do and what would be
The meed and measure of your sorrow,
If Genius pondered thoughtfully
And then purloined your job tomorrow?

And will you show a pretty rage,
Or register a speech emphatic,
If they displace, this wonder-age,
Yourself by something automatic?
If here, where you have ruled and where
Your haunting voice is prone to linger,
They oust you from your queenly chair
And set a little metal finger?
What *will* you do? For we admit
A sneaking longing, only human
To know how you will take to it,
So fickle is the genus woman!

Now have your say, sweet-mannered friend,
(And how we hate this harsh commission!)
For present signs and all, portend
Precisely this untoward condition!
A time when we've forgotten all
Your loyal efforts, sometimes frantic,
And automatics make the call—
A surer way, though less romantic!
And Genius lets this warning slip:
"At switchboards you too long have tarried;
I beg you take this little tip,
O Priestess of The Phone, GET MARRIED!"

This, it must be admitted, is a mighty clever bit of verse, possessing considerable literary merit and worthy a place in an "honest-to-goodness" literary magazine. We wish there were more telephone poets in this writer's class.

A New P. B. X. Cordless Switchboard.

The Stromberg-Carlson Telephone Mfg. Co., Rochester, N. Y., has recently placed on the market a practical Central Energy, lamp signal, cordless type P. B. X. switchboard known as its No. A-8551. This equipment is self-contained and portable. A 31-in. iron pedestal with standard flanges for floor mounting is furnished so that the switchboard can be conveniently located alongside an attendant's typewriter desk. This makes it possible to have the switchboard nearby and in a convenient place when there is no other available mounting handy. When the switchboard is placed on top of a roll top desk or a shelf on a wall, as the owner may wish, a portable desk telephone can be substituted for the No. 7-B Combination-phone, which is used as the operator's equipment.

As shown by the photograph here reproduced, the cordless equipment is neatly arranged on a swinging door which allows full access to all the interior equipment. This board has a capacity of 10 lamp signal line equipments, four lamp supervisory equipments, together with operator's equipment, hand generator and night bell equipment. Main exchange trunks are provided as required. For each trunk equipment added the regular line capacity is reduced. The switchboard is designed to operate on 20 volts. The line lamp signals are wired directly in series with the line circuit. Connecting keys provide for establishing four connections with single lamp supervision.

Those attending the Stromberg-Carlson exhibit at the Chicago convention had an opportunity to examine this new cordless switchboard and note all its unique features. Shipments of these boards can be made promptly and any telephone man requiring a P. B. X. switchboard of this capacity should write the company for more particulars and prices. A very attractive price is now being made on these equipments to get them introduced.

The New Stromberg-Carlson P. B. X. Board.

Something of the Naugle Pole Yards.

Through the courtesy of the Naugle Pole & Tie Co. of Chicago, there are here reproduced several halftone engravings of views illustrating the scope of its business which have never before been published in a journal Out

One of the Three Alleys in the Big Chicago Pole Yard of the Naugle Company.

in the lumber district of Chicago among the network of railroad tracks, this company has established what is said to be the largest and best equipped pole yard in the country.

This yard is not only reached by railroads, but has a dock front on the Chicago River, at which point the lumber steamers bring in their fresh, fragrant cargoes of cedar from the North. The company operates the steamer "George Burnham," which is its own personal property, and which plies between the north woods and Chicago during the entire season of navigation.

Stock is concentrated in this Chicago yard from the great white cedar producing states of Wisconsin, Michigan, Minnesota and Ontario. In addition to white cedar the company carries a very large stock of western red cedar, which originates in Idaho, Montana, Washington, Oregon and British Columbia.

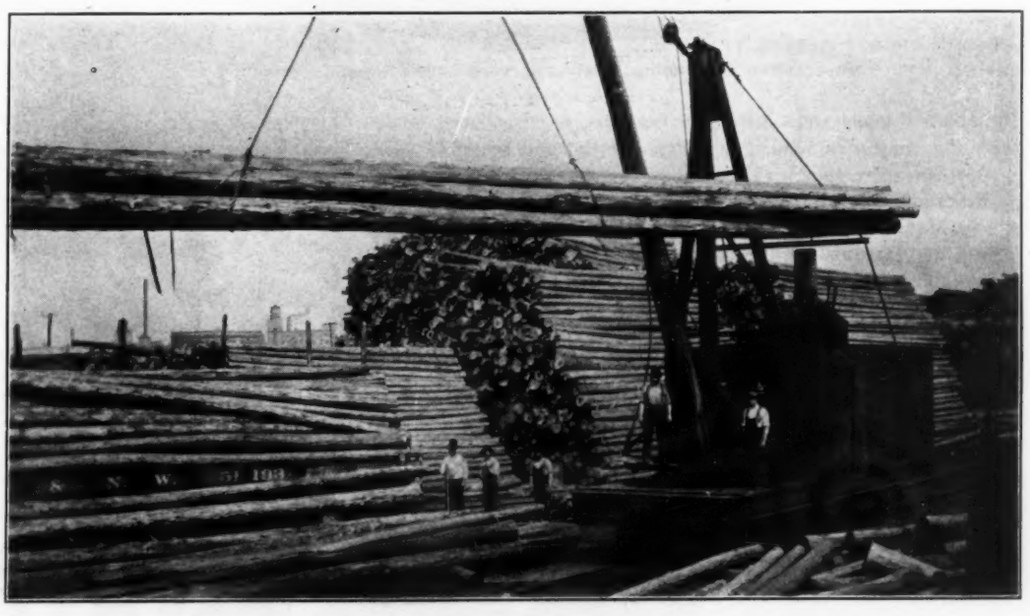
The first illustration gives but a vague idea of the enormous quantity stock carried in this Chicago yard. This picture shows but one of the three alleys in the yard. Some appreciation of the height of the piles may be had by comparison with the size of the men on the side of the pile in the foreground. This yard may be very aptly described as being 2,000 ft. long, 300 ft. wide and 40 ft. high.

Shipments are loaded the same day as orders are received, this being made possible through the use of two traveling locomotive cranes which are able to handle 15 carloads of poles per day. A picture of one of these cranes shows it in action loading a car of long poles, the order for which was received that morning. These cranes have various uses, few people realizing the benefits derived from them. They enable the yard superintendent to pile the poles to the height of 40 ft. above the track level, promptly.

This yard is in the heart of the switching district of Chicago, which, as generally known, is entered by 38 trunk lines, reaching all points of the United States, Canada and Mexico. The one boast of this company is that it neater and enabling him making them appear far can load any order of ordinary size the same day as received and could make a very good start on any large order the same day, finishing up far more quickly and with better service and dispatch than anyone else in the business.

All cars are wire traced on request, whether originating in the northern yards or the Chicago yard, thereby securing for the customers the quickest possible delivery.

At Pinconning, Mich., which is but a short distance above Detroit, the Naugle Pole & Tie Co., has located a very large pole yard, from which point shipments are made, within 48 hours of receipt of order, to Michigan, Indiana. Kentucky, Ohio, Pennsylvania, New York, Ontario, and other eastern points. This yard is located on the Mackinaw Division of the Michigan Central Railroad. Cars are always available at this point, as the Michigan Cen-

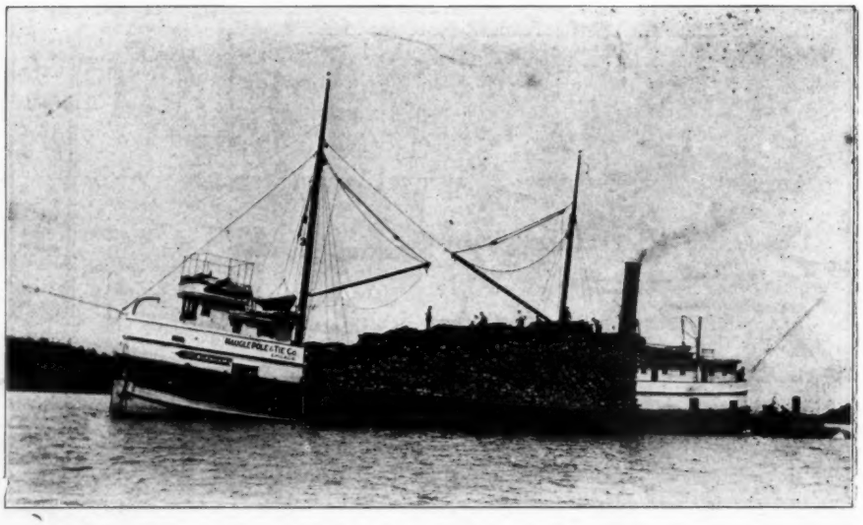


The Traveling Locomotive Crane Makes Quick Work of a Big Order.

tral deems it its greatest lumber division and concentrates the greater number of its cars at this point, making it possible to load immediately.

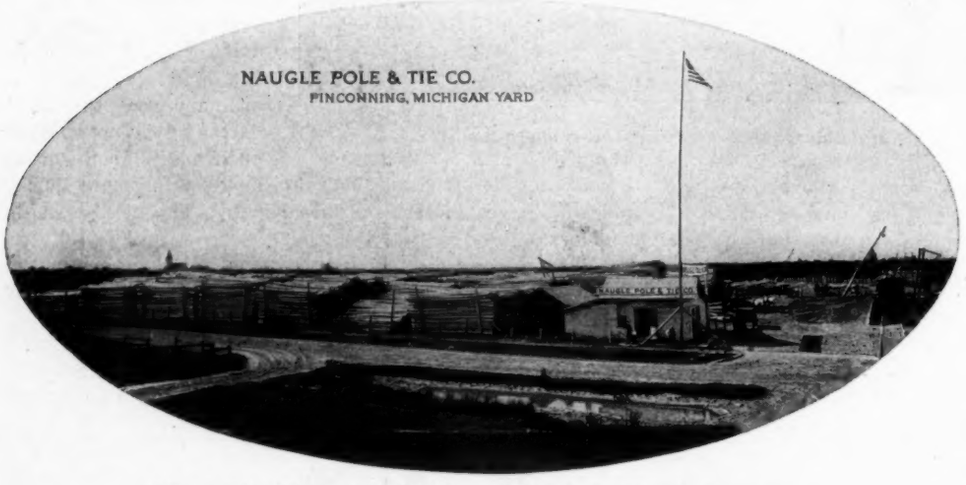
The company has a large stock of western red cedar poles and has at all times quite a few carloads of poles enroute from the West to its Pinconning, Mich., and Chicago yards, which can be readily diverted to fill any orders received and on which they can be applied. This saves customers a wait of from a month to six weeks for delivery as is frequently the case when an order is received from the West.

A photograph is also shown of some long western poles. These are exceptionally straight and sound, being 10 in. at the top and 80 ft. long, an unusual size for even that great pole country.



The "George Burnham," Bringing in a Load of Poles to Chicago.

It is stated that all stocks shipped by the company are inspected at least twice by its own inspectors, who are old timber men and thoroughly reliable. This, with the company's absolute guarantee that the stock shipped shall meet specifications, it is declared, protects the consumer against anything but the best material.



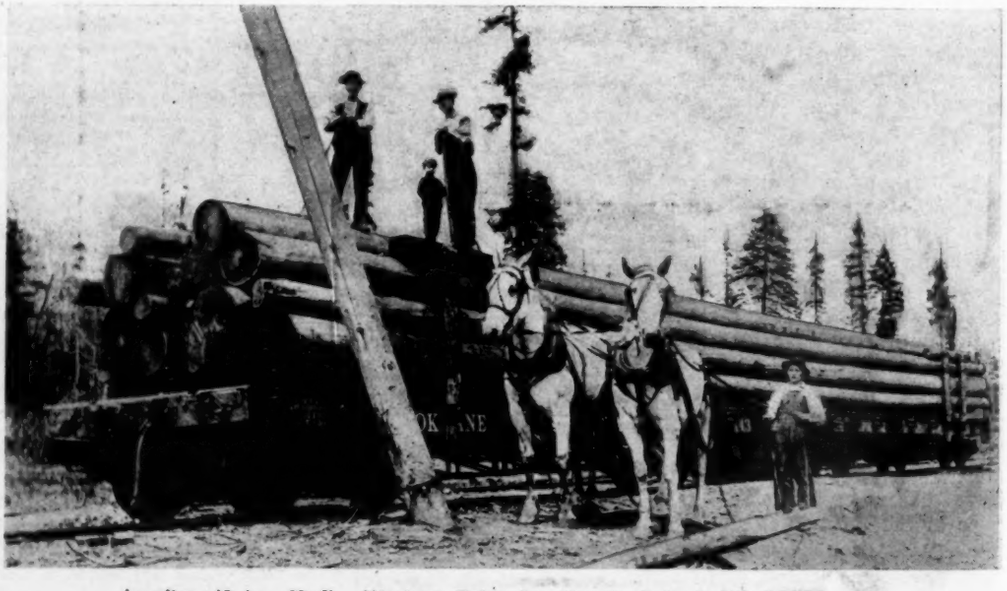
View of the Pinconning, Michigan, Yard of the Naugle Company.

Ericsson Goes South.

Florida is infested with pests of various kinds—scorpions, jiggers, mosquitoes, soft shell crabs and others—but no pest is more pestiferous to Floridans generally and those Floridans particularly who are operating telephone exchanges than the Seaboard Air Line Railway.

Now the Seaboard Air Line Railway is not so pestiferous as railroads go, possibly, but the big difficulty in the eyes of the Floridans generally and specifically, as mentioned above, is that apparently at times it doesn't go at all. They rather naturally judge thus harshly from performances—or lack thereof. If, for example, it takes two months to get a telephone from up North to Jacksonville, Tampa or Pensacola, as is often the case, and if the railroad has no snow storms or other specially hindering obstacles to overcome, one would naturally say that said railroad was more or less negligent or slothful or otherwise culpable, in the matter of speed of delivery—therefore pestiferous, when it happens continually.

So much for the villain; now for the hero. It happens that there dwells in the village in Florida yclept Jacksonville, a long, lean, lanky southern gentleman with a serious mein and a perfectly good crop, or thatch, of dark brown hair—not a dark brown taste, mind you. This perfectly good thatch not



Loading 10 in., 80 ft. Western Poles for Naugle Pole & Tie Customers.

only covers the scalp of the gentleman mentioned, but likewise apparently covers numerous and sundry clever ideas, as you shall judge for yourself, from what follows forthwith.

Now this happy, handsome and haughty southerner is known by the name of "Worthington," or in his southern fastnesses, "Worthy"—for short. Likewise, is he the "big boss" in the livest and most enterprising electrical supply house within 400 parasangs; namely, the Florida Electric Co.

"Worthy" hatched under the above mentioned dark brown thatch the remarkably original and clever idea of seeing to it that the pestiferousness of Florida's worst pest was removed. He pulled its sting, so to speak, by arranging for the exclusive agency of not only the finest telephones on earth, but the most popular in his section; namely, Ericsson.

Having hatched this perfectly good scheme, he put it into execution by laying in a large and varied assortment of all things telephonic, and then proceeded to notify all his friends and friends-to-be of the facts. He advised that he represented Ericsson exclusively in the territory comprising Florida and everything West, South and East thereof, which, if you look at the map, is going some.

Anyhow, "Worthy" having accomplished this feat, and incidentally living up to his nickname, certainly has done much for Floridans and they ought to do as much for him, as you would naturally say without stopping to think twice. Well, they're doing it. They're all doing it—"everybody is," as the song goes. And they are getting their telephones almost the "same day" right out of Jacksonville stock and, as "Worthy" says, "Let the Seaboard do their worst. We've got 'em licked."

Novel Test of Gottschalk Transmitter.

A most interesting test of the properties of the Gottschalk transmitter was made at the recent National Convention. From La Salle Hotel, a call was put through to Mr. Gottschalk's office in New York City by Mr. VanDeventer. A conversation was carried on, using the Gottschalk transmitter one moment and one of the standard type another, without indicating to the parties at the New York end which was being used except by number. In each case Mr. VanDeventer said the Gottschalk transmitter gave the best results. One of the transmitters was, as stated, submerged in water, the effect being increased by placing it in a bowl containing gold fish. While the New York connection was up, this transmitter was switched into the circuit and Mr. VanDeventer held his watch, a repeater, outside of the gold fish bowl, and there struck the hour and the quarters. The sound of this tiny gong, it is said, was distinctly heard at the New York end of the line. It may easily be seen that the test was considered valuable as the toll charges while it was in progress amounted to something over $18.

The Transmitter in the Goldfish Bowl.

Big Business at Rochester.

Phony Bill, Stromberg-Carlson's lively blotter representative, gleefully advises everybody to keep up with the handwriting on the wall. The sentiment is his and evidently voices the conditions in his plant. If you don't receive these blotters regularly, write the Stromberg-Carlson Telephone Mfg. Co, at Rochester, N. Y., and get on the list.

Times Must Be Prosperous for Phony Bill.

General Insulate & Machine Changes Name.

At the annual meeting of the stockholders of the General Insulate & Machine Co., 1008-1014 Atlantic avenue, Brooklyn, N. Y., it was voted to change the name to General Insulate Co.

It is said that the great and rapidly increasing demand for the General Insulate Company's products—"Insulate" being declared one of the best and most favorably regarded compositions on the market—is such that despite the fact that the company's plant was increased last year (and in recent months its output has been increased nearly 50 per cent.)—the directors of the company have just voted an appropriation, as absolutely necessary, to enlarge the size of the company's present building and increase the plant capacity over 50 per cent.

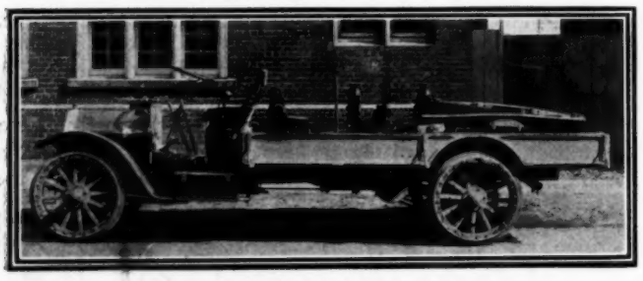
The new high heat resisting material of the General Insulate Co. will, it is said, offer a still larger field of activity than ever heretofore.

Federal Trucks for Detroit Company.

Detroit pedestrians who have inadvertently wandered along the populated streets instead of keeping to the safer suburban districts, says a Detroit, Mich., paper, have recently discovered that the art of tree climbing is a handy thing to have around the house. For ever and again they have been startled out of their philosophical reveries by a sudden and noisy apparition that has approached with the speed, apparently, of the Twentieth Century Limited and all the indifference of an intoxicated individual who cares not whether he takes the sidewalk or the street.

The apparition in question is nothing more than the latest development in "trouble wagons" as applied to the equipment

of a street railway company and when it rushes by, nonchalantly hurdling a curb to take a more easy riding sidewalk for a block or two, the pedestrian from his safe perch on the lower limb of a handy tree now realizes there is something doing down the line in the way of a fire, derailed street car,



Specially Designed Motor Trouble Wagon.

or, mayhap, a serious accident to some unfortunate who has fallen beneath the wheel of a heavy car.

The trouble wagon used by the Detroit United Railway for these purposes is a specially designed Federal motor truck, built to order for the company by the Federal Motor Truck Co. of Detroit. This vehicle illustrates in a very emphatic manner how the motor truck is revolutionizing the work of public service corporations in general.

Ellsworth J. Burdick, superintendent of power for the Detroit United Railway and in charge of overhead and power stations, had two kinds of problems to meet. He had to maintain a wagon for fires, derailed cars and the like and one for the repairing of broken trolley wires. By adopting the Federal motor truck and using two, one for each kind of work he has not only solved the difficulties but has revolutionized these departments.

The trouble wagon used for ground work was built by the Federal people according to body designs supplied by Mr. Burdick to meet his requirements. It has been in operation a year. The truck is equipped with Swinehart cellular tires and is governed at 18 miles an hour instead of the customary 15. The wagon often beats the fire department on a fire call.

The second motor wagon Mr. Burdick designed and had built by the Federal Motor Truck Co. is used exclusively for overhead work; that is, it answers all calls when trolley wires are broken or need attention.

Eastern Sales Agent for Valentine-Clark.

The Valentine-Clark Co., Minneapolis, has retained the services of J. Alexander Navarre, who will represent the company at Toledo, Ohio, as eastern sales agent, with offices in Room 1012, Spitzer Building.

Mr. Navarre is one of the best known cedar-pole salesmen in the central and eastern markets and his acquisition by the Valentine-Clark Co. will be valuable not only to the company but to users of poles in Mr. Navarre's territory, as it will assure his former customers greatly increased facilities and prompt shipments.

Mr. Navarre will have charge of all sales east of Chicago.

A Telephone-Operated Typewriter.

The voice-operated typewriter is the latest addition to the mechanical world, says a New York dispatch. It is the invention of John B. Flowers, of Brooklyn, and by its use one is able to record one's voice automatically. Thus far the new invention has recorded words of one syllable only, but with time and work the inventor claims it will record any thought expressed.

Mr. Flowers reproduces the functions of the brain in recording sound waves by substituting for the ear drum a telephone transmitter, steel reeds and electric currents. The telephone diaphragm takes the place of the car drum, the steel reeds the place of the ear fibers; electric currents the place of the nerves, and in place of the human hand to operate the keyboard, a bank of solenoids is used. A spoken word sets the diaphragm to vibrating. The overtone of a letter affects the reed attuned to it and causes it to vibrate sufficiently to close an electric circuit. As soon as the circuit is closed a solenoid pushes down the key of the letter spoken.

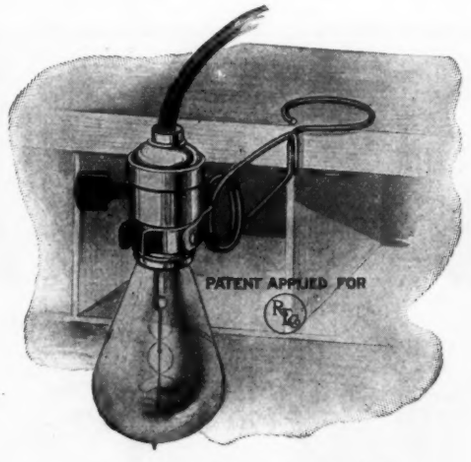
Telephone Girl Comes Into Title.

People of Fredericton, N. B., are recalling a well-known romance of a few years ago since a cable was received recently announcing the death of the Earl of Ashburnham and the succession of the Hon. Thomas Ashburnham, a nephew, who resides in Fredericton, to the title and estate, says a correspondent there.

Hon. Mr. Ashburnham, as he was then, fell in love with the voice of a telephone operator in Fredericton. On inquiry he discovered that the voice belonged to Miss Marie Anderson, whose personality he found was as attractive as her voice, for he married her shortly afterwards.

A Handy Bracket for Supporting Electric Lamps.

The Reliable Electric Co., of Chicago, has just applied for patents on a new incandescent lamp supply which has found a place among trouble finders around the switchboards of the telephone companies. This "Light-arm," as it is called, snaps on any ordinary socket of a trouble lamp. It also has a pocket for the soldering iron. How many trouble finders have pondered this question "Where can I put my soldering iron?" The Reliable light-arm is said to solve the question. The arm will carry 15 pounds without letting go its grip on



The Reliable Light-Arm.

any object. It is so constructed as to grip a round or flat rod as well as a square one.

This light-arm was on exhibition at the recent National Independent telephone convention and found many admirers among the telephone men. Those who bought one have since sent for others. Considering the small cost involved, it is believed there is nothing on the market that is superior to the Reliable light-arm.

It has many other uses in addition to those about an exchange. For automobile repairing, it has its place among the many famous articles on the market. It can be used on every part of the car and it is said there is no danger of lamps breaking, causing gasoline explosions and the burning of cars and garages.

Condensed News Reports

Officers of Companies are Earnestly Requested to Forward Us Promptly All Financial and Other Statements as Soon as Issued, and Any Items of Interest as to Their Plants and Systems

Personals.

P. B. CUMINGS has been appointed general manager of the Farmers Telephone Co., at Scribner, Nebr.

GEORGE E. DEVANEY has been appointed manager of the Indian Valley Telephone Co., at Cambridge, Idaho.

BERT ZEARFOSS, of Pukwana, S. D., has been appointed manager of the Mutual Telephone Co., of Traer, Iowa.

WILMER A. STOVER has been appointed superintendent of wire chiefs of the Bell Telephone Co., in Philadelphia.

M. R. GIBSON, of Nebo, Ky., has been appointed manager of the properties of the Cumberland Telephone Co. at Shawneetown, Ill.

W. G. MAINE, of Easton, Pa., has been appointed general superintendent for the Stroudsburg & Bushkill Telephone Co., at Stroudsburg, Pa.

C. R. BRINCKLEY has been appointed local manager of the exchange of the Cumberland Telephone & Telegraph Co., at Adams, Tenn., to succeed B. J. Delk, resigned.

J. J. KINNER has resigned his position as manager for the Peoples' Telephone Co., at Athens, Ill., to accept a position with the International Harvester Co., of Chicago.

O. F. CLARK, local manager of the Central Union Telephone Co., at Champaign, Ill., has been made district commercial manager with headquarters at Springfield, Ill.

G. H. FULMER, of Johnstown, Pa., has been appointed local manager for the Bell Telephone Co., at Indiana, Pa., succeeding S. E. Warrick, who was recently transferred to the Punxsutawney office.

J. H. RICHARDSON, manager of the Sun Telephone Co., at Lexington, Tenn., has resigned his position to enter the mercantile business at Whiteville. He will be succeeded by J. A. Carpenter, of Corinth, Miss.

E. C. BRADLEY, vice-president and general manager of the Pacific Telephone & Telegraph Co., with headquarters at San Francisco, Cal., has resigned after 40 years' service in the telephone and telegraph fields.

J. N. MCNAIR has been appointed manager for the Southern Bell Telephone & Telegraph Co., at Marietta, Ga., succeeding H. R. McClatchey, who has been promoted to district commercial manager with headquarters at Rome, Ga.

W. G. WILCOX, who has been manager of the Ironwood, Mich., exchange of the Michigan State Telephone Co., for 20 years, has resigned his position to become manager of the Wisconsin Telephone Co.'s system at Superior, Wis.

F. O. BRIGGS, of Trenton, N. J., has been elected a director of the Bell Telephone Co., of Pennsylvania, to succeed P. L. Spaulding, who recently resigned as vice-president to become president of the New England Telephone & Telegraph Co.

D. P. BONE, manager for the New York Telephone Co., at Binghamton, N. Y., has been transferred to Elmira. C. D. Burch, manager at Elmira, has been appointed sub-license agent with headquarters at Elmira, to improve rural service.

W. E. JONES, for several years manager of the Maryville, Mo., exchange of the Bell Telephone Co. of Missouri, has resigned his position to become sales manager of Sewell & Carter's automobile department, both at Maryville and at Burlington Jct.

F. W. ATKINS, manager of the Central Union Telephone Co., at LaSalle, Ill., has been appointed district commercial manager, with headquarters at LaSalle. His territory will cover the counties of LaSalle, Putnam, Bureau, Marquette and Livingston.

C. C. BAYLESS, formerly district manager of the Missouri & Kansas Telephone Co., at Wichita, Kans., has been promoted to manager of the exchange at St. Joseph, Mo., to succeed B. L. Brown, who has recently been transferred to the traffic department.

GEORGE DODDS, district manager of the Northwestern Telephone Co., with headquarters at Winona, Minn., has been promoted to the position of special agent in the general offices in Minneapolis. W. L. Van Camp, of Owatonna, Minn., will succeed Mr. Dodds.

T. F. KEEFE, for the past four years manager of the Superior, Wis., exchange of the Wisconsin Telephone Co., with supervision of other sections of the northern division, has resigned. Mr. Keefe went to Superior from Ashland and has been in the Bell's employ for 10 years.

F. L. WOODRUFF, formerly division commercial superintendent at Montgomery, Ala., has been transferred to Atlanta, Ga., as special agent in the general commercial office. J. C. Thompson, formerly division traffic manager at Birmingham, Ala., has been transferred to Atlanta as division traffic superintendent.

C. MONTAGUE, who has for some time been manager of the Parkersburg, W. Va., exchange of the Bell Telephone Co. of Pennsylvania, will be transferred to the management of the Washington, Pa., office, to succeed A. W. Love, who has been transferred to the office of division manager W. B. Clarkson, at Pittsburgh.

C. H. PETTY, formerly connected with the Atchison Telephone Co., Atchison, Kans., which recently sold out to the Missouri & Kansas Telephone Co., has been appointed manager of the Excelsior Spgs., Kans., exchange of the Kansas City Long Distance Telephone Co., to succeed C. T. McCraken, who resigned to enter the automobile business in New York City.

FRED BECKMAN, for the past 13 years local manager for the Central Union Telephone Co., at Bloomington, Ill., has been promoted to district plant chief, his territory covering McLean, Livingston, Logan, Ford and other adjoining counties. He will continue to make Bloomington his headquarters. J. E. Thomas, of Kankakee, will succeed him as commercial and plant chief at Bloomington.

New Companies.

EMPIRE, CAL.—The Empire Telephone Co. has been incorporated with $14,000 capital stock. The incorporators are: S. S. Keller, C. F. Rinehart, R. M. Fike and L. E. Miller.

MODESTO, CAL.—About 75 farmers, representing the various farmers' telephone companies in this vicinity, have formed the Farmers' Telephone Exchange Co. Articles of incorporation will be filed at once. The following directors were elected: W. Hemminger, S. N. McBride, E. L. Routh, T. J. Crispin and J. M. Cross. J. J. Hardie was elected treasurer.

TOPEKA, ILL.—The Farmers' Mutual Telephone Co. has been incorporated with $2,500 capital stock. The officers and incorporators are: G. H. Bartel, president; E. P. LeSourd, secretary; M. N. Smith, treasurer, A. D. Messman and B. K. Behrends.

SEYMOUR, IOWA.—The Seymour Telephone Co. is contemplat-

stone City, S. D.

BLACKWELL, OKLA.—The Bethel Telephone Co. has been incorporated with $780 capital stock. The incorporators are: L. H. Burkhalter, M. Bacon and C. J. Winner.

BRUNO, OKLA.—The Harmoney Telephone Co. has been organized with $1,000 capital stock. The incorporators are: O. C. Bonham, J. M. Green, G. A. New, M. H. Vanderburg and L. L. Inwell.

GUTHRIE, OKLA.—Articles of incorporation have been filed by the Cotton Wood Telephone Co. with $240 capital stock. J. A. Purviance, P. H. Cooper, N. G. Rich, P. B. Withrow and Gus Fruendt are the incorporators.

Construction.

OZARK, ARK.—The Home Telephone Co. will make extensive improvements, including the cabling of all wires in the business district.

AURORA, ILL.—The Interstate Telephone & Telegraph Co. will spend $500,000 in improvements, including the erection of a new exchange building at Aurora.

AURORA, NEB.—The Hamilton Home Telephone Co. is planning to erect a new exchange building in the near future.

DALLAS, TEXAS.—The Dallas Automatic Telephone Co. is planning to enlarge the capacity of its five exchanges to 20,000 telephones, twice its present size.

CHIPPEWA FALLS, WIS.—The Chippewa County Telephone Co. is completing arrangements for installing the automatic system in Eau Claire and this city.

Elections.

BRIMFIELD, ILL.—The annual meeting of the Brimfield Telephone Co. was held recently and the following directors were elected: Richard Pacey, Henry Memler, E. M. Maher, H. A. appointed as manager.

TAMPICO, ILL.—At the annual meeting of the Tampico Farmers Telephone Co. the following officers and directors were re-elected: President, L. A. Wheelock; treasurer, J. M. Olsson; directors, J. L. Darnell, N. L. McKenzie.

WABASH, IND.—At the annual meeting of the Home Telephone Co. the following officers were re-elected: N. G. Hunter, president; H. E. Wallace, vice-president; W. S. Stitt, secretary; and John Hipskin, treasurer.

COUNCIL BLUFFS, IOWA.—The annual meeting of the Independent Telephone Co. of Council Bluffs was held recently and the old officers and directors were re-elected as follows: President, General G. M. Dodge; vice-president, E. H. Merriam; secretary, C. D. Parmalee; treasurer, T. G. Turner; directors, C. E. Yost, G. H. Pratt, G. E. McFarland, W. A. Pixley, C. D. Parmalee, E. H. Merriam, T. G. Turner, General G. M. Dodge and Colonel C. G. Saunders.

ELDRIDGE, IOWA.—The Eldridge Mutual Telephone Co. held its annual meeting recently and elected the following officers and directors: President, John Hansen; vice-president, August Lamp; secretary, M. H. Calderwood; treasurer, Albert Oetzmann; directors, Rudolph Koch, William Moeller, Frank Keppy, Fred Krambeck and Fred Hauer.

ROYAL, IOWA.—The stockholders of the Royal Telephone Co. held their annual meeting recently and elected the following directors for the coming year: Andrew Johnson, Frank Huss, Will Roberts, John Dumkreiger, T. W. Bailey, H. B. Gronbeck and M. F. Smith. The new directors elected officers as follows: Will Roberts, president and manager; M. F. Smith, secretary and treasurer.

SAC CITY, IOWA.—At the annual meeting of the stockholders of the Farmers Telephone Co. the following directors were chosen for the ensuing year: William Pitstick, George Hein, Lloyd Mann, L. M. Barnhill, N. J. Wilson, Fred Pellersels, J. M. Deibert, James Comstock and F. R. Hiersche. The directors elected the following officers: Mr. Comstock, president, and Mr. Hiersche, secretary.

TOLEDO, IOWA.—At the annual meeting of the Neighbor Telephone Co. No. 9 the following officers and directors were elected: V. Novotny, president; Jos. Koss, secretary; J. Chizek, treasurer; Kriz, Dvorak and Linhart, directors.

HICKMAN, KY.—The Cayce Telephone Co. held its annual meeting recently and elected new officers and directors as follows: Tom Atteberry, president; and J. G. Wade, Luther Hampton and Murley Roper, directors.

MEDFORD, MINN.—At the annual meeting of the Straight River Telephone Co. the following directors and officers were elected: Directors, C. C. White, C. W. Heath, C. S. Reinhard, John Esced, W. J. Mollenhauer; C. S. Reinhard, president; C. C. White, secretary and treasurer.

PRATT, MINN.—The annual meeting of the Pratt Rural Telephone Co. was held recently and the following officers and directors were elected: President, Frank Kuntz; vice-president, John F. Reuchin; secretary, Gus Thiele; treasurer, G. B. Thamert; and directors, Sam Prestegaard and Joseph Kvasmeka.

ZINCITE, MO.—The Looking Glass Prairie Telephone Co. held its annual meeting recently and elected the following officers: President, Phillip Mann; vice-president, Otto L. Rumer; treasurer, George Richter; secretary, Louis J. Scheve.

ALBANY, MO.—The Albany Telephone Co. held its annual meeting recently and re-elected the present board of directors as follows: J. W. Agee, E. A. Kent, B. F. Hardin, M. W. Branenburg, M. P. Whaley, E. L. Peery, J. E. Lainhart. The above board elected the following officers for the coming year: J. W. Agee, president; M. P. Whaley, vice-president; B. F. Hardin, secretary; M. W. Brandenburg, treasurer.

FIRTH, NEB.—The stockholders of the Firth Telephone Co. held their annual meeting recently and officers were elected as follows: President, J. E. Remmers; secretary, Mr. Moothart; treasurer, C. E. Groves.

COHOES, N. Y.—The Cohoes-Waterford Home Telephone Co. held its annual meeting recently and elected the following directors: James H. Shine, of Cohoes; Fred W. Kavanaugh, of Waterford; Peter McCarthy, of Troy; Louis R. Breslin, of Waterford; Paul H. Andra, of Cohoes; Irving H. Griswold, of Albany; W. B. Woodbury, of New York; George H. Wilsodon, Harvey S. Greene and James S. Clute, of Cohoes, and H. F. Stevens, of New York. The following officers were elected by the board of directors: Mr. Shine, president; Mr. Griswold, first vice-president and general manager; Mr. Stevens, second vice-president; Oliver J. Hawkins, manager; S. C. Ormsbee, secretary; W. W. Nicholson, treasurer.

HOLGATE, OHIO.—At the annual meeting of the Farmers Mutual Telephone Co. the following officers and directors were elected: President, George Mollett; secretary, John Howe; treasurer, H. H. Meyer; directors, Chas. Yetter, Henry Meyer, Noah Knapp, Frank Adams and Dick Bunke.

LOYALSOCK, PA.—At the annual meeting of the stockholders of the Loyalsock Telephone Co. directors for the ensuing year were elected as follows: R. H. Rothfuss, H. G. Casner, F. A. Hayes, R. H. Milnor, B. A. Henry, George M. Lipp, C. F. Wheeland, Jacob Thomas and H. G. Eissenmenger. The directors elected the following officers: R. H. Rothfuss, president; George M. Lipp, vice-president; H. G. Casner, secretary; H. G. Eisenmenger, assistant secretary; F. A. Hays, treasurer.

ST. ALBANS, VT.—The Franklin County Telephone Co. held its annual meeting recently and elected the following officers and directors: President, Jasper N. Keller; vice-president, Fred W. Story; secretary, C. D. Watson; treasurer, Edmund S. Willard; auditor, E. W. Longley; directors, Jasper N. Keller, Francis A. Houston, Carl T. Keller, Nat B. Jones, F. W. Story and George H. Dresser of Boston, and E. C. Smith, A. C. S. Beeman, C. E. Pell, Frank L. Greene and J. W. Ryan of this city.

ROCK ELM, WIS.—The South Hill and Range Line Telephone Co. has elected the following officers for the coming year: President, M. J. Hamilton; vice-president, J. Gore; treasurer, Lawrence Hurtgen; secretary, Jeno Van.

SAWYER, WIS.—At the annual meeting of the Sawyer & Western Telephone Co. the election of officers and directors resulted as follows: Geo. O. Whitford, president; Melvin Haines, vice-president; Adam Brink, secretary; Eli Schumacher, treasurer; Frank Feest, Chris Hanson and F. A. Krueger, directors.

Financial.

ROCHESTER, IND.—The Rochester Telephone Co. has increased its capital stock $40,000.

SHABBONA, ILL.—The capital stock of the Inter Township Telephone Co. has been increased to $20,000.

DUNKIRK, IND.—The Citizens' Telephone Co. has increased its capital stock from $10,000 to $25,000.

MT. AYR, IOWA.—The Mount Ayr Mutual Telephone Co. has declared a 10 per cent. dividend.

ASHLAND, OHIO.—At the annual meeting of the Star Telephone Co. a semi-annual dividend of 3 per cent. was declared.

FREMONT, OHIO.—The Fremont Home Telephone Co. has increased its capital stock from $125,000 to $200,000.

OLD FORT, OHIO.—The Old Fort Mutual Telephone Co. has declared an 8 per cent. dividend.

SAN MARCOS, TEXAS.—The San Marcos Telephone Co. is planning to spend $2,000 for the installation of additional cables.

BALDWIN, WIS.—The Baldwin Telephone Exchange has declared a dividend of 10 per cent.

CUMBERLAND, WIS.—The McKinley Farmers' Telephone Co. has declared a dividend of $2 per share.

MONROE, WIS.—The United Telephone Co. has declared a 3 1-2 per cent. dividend.

Franchise.

ST. PAUL, MINN.—The Tri-State Telephone & Telegraph Co. has been granted a long distance franchise by the city council to operate in the city of Crookston.

Underground.

ABINGDON, ILL.—The Mutual Union Telephone Co. will install underground cables and a new switchboard.

CEDAR RAPIDS, IOWA.—The Cedar Rapids & Marion Telephone Co. will rebuild its west side cable lines and will install a half a mile on conduit, the cost of which is estimated at about $33,000.

Miscellaneous.

SALINA, KANS.—The Ellsworth County Telephone Co. and the Kansas Central Telephone have consolidated with the Salina Telephone Co., of this city.

BELLEFONTAINE, OHIO.—The United Telephone Co., of this city, has purchased the property of the Champaign Telephone Co., at Rosewood, and will enlarge the plant.

DEFIANCE, OHIO.—The Northwestern Telephone Co. has been granted the authority to purchase the property of the Central Union Telephone Co. in this city.